PRELIMINARY ASSESSMENT REPORT
North Main Street Las Cruces
CERCLIS ID # NMN000606911
DOÑA ANA COUNTY, NEW MEXICO

September 2008

New Mexico Environment Department
Ground Water Quality Bureau
Superfund Oversight Section

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1.0 Introduction

Under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 United States Code (U.S.C.) §§ 9601 to 9675 (CERCLA), the New Mexico Environment Department (NMED) Superfund Oversight Section (SOS) conducted a Preliminary Site Assessment (PA) of the North Main Street Las Cruces Site (the Site) in Doña Ana County, Las Cruces, New Mexico. CERCLIS ID # NMN000606911.

The objective of the PA is to evaluate the Site using the Hazard Ranking System (HRS) (Ref. 1) and the Superfund Chemical Data Matrix (SCDM) (Ref. 2) to determine if a threat to human health and the environment exists such that further action under CERCLA is warranted.

2.0 Site Information

2.1 Location and Description

The Site is characterized as a contaminated ground water plume with no identified source(s) in central Las Cruces, three miles west of Interstate 25. The area of ground water contamination is located between 1800-1900 North Main Street, Las Cruces, New Mexico. The Site is located at approximate latitude 32°19'31.86" and approximate longitude 106°46'56.98" (Figure 1).

The Site is located in a light industrial area with residential homes approximately 0.1 miles to the west northwest and southwest (Figure 1). Interstate 25 is approximately 1.25 miles east of the Site.

The climate of the area is arid. Average total annual precipitation between 1959 and 2005 was 9.23 inches. Temperatures for this period ranged from a lows of 28.1°F to a highs of 94.9° F. Precipitation is highest between July and September while temperature highs are from June to August (Ref. 3).

2.2 Operational History and Ownership

The Site is characterized as a ground water plume of chlorinated and aromatic hydrocarbon compounds with no identified source(s). Operational history and ownership investigations focused on Leaking Underground Storage Tank (LUST) sites and dry cleaners in the area.

Leaking Underground Storage Tank Sites
There are 29 Underground Storage Tanks (UST) sites within a one mile radius and 85 UST sites within a four mile radius of the Site (Ref. 4). Three of these UST sites are located between 1800 and 1900 North Main Street. Tetrachloethene (PCE), and styrene detected in ground water samples at these sites are the basis for this investigation.

PCE was detected commingling with a gasoline plume in monitoring wells installed to investigate the Midtown Chevron leaking underground storage tank (LUST) site (Release ID #3515). The address, 750 South Main Street, lies at 32° 18' 12.1" north latitude, 106° 46' 40.7" west longitude. Based on relative contaminant concentrations in various wells, the two plumes appear to have separate sources. The gasoline plume is bounded by a monitoring well network designed for the purpose of monitoring the gasoline plume, whereas the PCE plume is not. A sample collected from a temporary well installed in 2004 for a Phase I and limited Phase II Environmental Site Assessment at the Loretto Towne Centre, 505 S. Main Street, also contained PCE (Ref. 11).

LUST Sites

There are three LUST sites located between 1800-1900 North Main Street, Las Cruces, New Mexico. The three sites are Scotts Auto Sales located at 1835 North Main Street, Las Cruces NM, facility ID 30518. This site was reported to PSTB on July 27, 1995. The second LUST site is North Main Self Serve located at 1875 North Main Street, Las Cruces, New Mexico, facility ID 30717. This site was reported to PSTB on February 3, 1999. The third LUST site is Bar-F #22 located at 1900 North Main Street, Las Cruces, New Mexico, facility ID 27612. This site was reported to PSTB on December 15, 1989. The first two sites are currently undergoing clean up, cleanup at the third site has been completed as of April 15, 2005 (Ref. 12).

On April 3, 1998 ground water samples from three monitoring wells at Scott's Auto Sales located at 1835 North Main Street, Las Cruces, New Mexico were sampled and analyzed using EPA method 8260 for volatile organic compounds (VOC) (Ref.13, p. 2). Styrene was detected at concentrations of 200 µg/L and 140 µg/L in MW-1 and MW-2, respectively (Ref. 13, p. 14 & 16).

On April 6-7, 1999 ground water samples were collected from six monitoring wells at Bar-F # 22 located across the street from Scott's Auto Sales at 1900 North Main Street Las Cruces, New Mexico. The ground water samples were analyzed using EPA method 8260. PCE was detected at concentrations of 1.6 µg/L and 1.8 µg/L in the samples from BF-22-1 and BF-22-5, respectively (Ref. 14).

NMED SOS staff reviewed ground water sampling analysis reports for samples collected on Site March 31, 2003 and June 29, 2006. The ground water was collected from monitoring wells located throughout Scotts Auto Sales, Bar-F # 22, and North Main Self Serve that is adjacent to Scotts Auto Sales at 1875 North Main Street, Las Cruces, New Mexico. Only benzene, toluene, ethylbenzene, and xylenes were detected along with other gasoline constituents. No PCE, TCE or Styrene was detected. (Ref. 15 and 16).

A complete list of contaminants and concentrations for each of the above sampling events can be found in Tables 2-7.

clean sand that are interbedded with silty clay. The middle unit is less permeable than the upper unit because of a greater degree of cementation and the widespread presence of the fine grained interbeds. HSU-MSF-2, however, probably forms the major aquifer zone in the basin because it is almost entirely below the water table (Ref. 18, p. 92).

From a geohydrologic perspective, the Mesilla and southern Jornada Basins occupy broad topographic depressions that are separated as well as linked by the entrenched Mesilla and Rincon Valleys of the Rio Grande. Both topographic basins, in turn, overlie a geohydrologically linked group of deep structural sub-basins and intervening buried bedrock highs. Both intrabasin and basin boundary structures play a major role in terms of ground water flow and geochemistry (Ref. 17 p. 49).

3.2.2 Site Hydrogeology

Depth to ground water in the area of the Site ranges from 40.59 to 43.28 feet below ground surface (bgs) (Ref. 19, p. 3-8). Ground water flow direction is southeast with a gradient of 0.002 feet/foot (Ref., p. 2 and Figure 4).

3.2.3 Local Ground Water Quality

Complex interactions occur between ground water and surface water in the Rio Grande flood plain. A system of canals distributes surface water for agricultural irrigation and a system of drains intercepted shallow ground water and returns it to the Rio Grande. Surface water leaks from the Rio Grande and canals to recharge the shallow ground-water system. In places, deeper ground water flows upward to recharge the shallow ground-water system. Evapotranspiration losses from vegetation, land, and water surfaces can have a major effect on the quality of ground water (Ref. 20, p. 8)

The City of Las Cruces has a distributed water supply system of 30 wells at depths of 300 to 1000 feet bgs (Ref. 21, p.1). Water in MSF2 is generally of better quality than in overlying valley-fill and basin-fill units, particularly in the northern part of the basin. The middle unit is the most heavily developed aquifer in terms of public and private drinking water production (Ref. 18). Total dissolved solids (TDS) in the CLC wells ranges from 300 mg/L – 1250 mg/L. EPA Secondary Drinking Water Regulations have a TDS MCL 500 mg/L. CLC Municipal Wells 20, 21, 23, 24, 39, 44, 60, 61 and 67 exceed the 500 mg/L. The highest TDS concentration is in CLC Municipal Well 21 with a TDS of approximately 1250 mg/L (Ref. 22 p. 69).

Research was done on local ground water quality during the investigation of the Griggs & Walnut plume. Uranium above EPA MCL levels of 30 μg/L is commonly detected in CLC Wells 10, 20, 21, 24, 38 and 44 (Ref. 23). Research conclusions were that naturally occurring elevated uranium concentrations are localized in an area of the Mesilla Basin trending along the west side of I-25 from localized oxygen poor stratigraphic intervals. Other geologic controls such as areas of geochemical mixing along fault zones are another possibility. Elevated uranium concentrations do not appear to be increasing over time; although there does seem to be some seasonal variation potentially related to pumping cycles (Ref. 24 p. 3).

- Teresa Moreno Water System Well # 1 and Well # 2 serve 25 people (Ref. 25, p. 6).
- El Patio MHP Well # 1 serving 86 people (Ref. 25, p. 7).
- Coachlight Inn Well # 1 serving 100 people (Ref. 25, p. 23)

Therefore the 28 public supply wells serve:
848 + 72 + 741 + 24,302 + 222 + 152 + 285 + 174 + 476 + 100 + 120 + 311 + 163 + 25 + 86 + 100 + 1,786 + 946 = 29,123 people (Ref. 25).

The average household size in Dona Ana County is 2.81 (Ref. 26). Therefore the 141 private wells serve approximately 141*2.81 = 397 people.

Therefore, approximately 63,960 + 29,123 + 397 = 93,480 people are served by the public and private wells within a four mile radius of the Site.

Table 8 shows the number of active drinking water wells within target distance limits (TDL).

3.3 Surface Water Pathway

3.3.1 Hydrology

The Rio Grande is the sole perennial surface water source and primary source of surface water in the region. The Rio Grande flows through a valley that is part of a narrow structural depression. CLC maintains Burn Lake (recreational), which is fed via irrigation and irrigation drain water. Storm water runoff from west central sections of Las Cruces also drain into Burn Lake. The approximate capacity of this recreational facility is 390 acre-feet. Agriculture provides the major source of ground water recharge; in return the aquifer provides water to the river under certain conditions. Issues which affect the relations between the surface water sources and the underlying shallow aquifer include irrigation practices, weather and precipitation patterns, releases of water from the Caballo Reservoir upstream, and well pumping rates (Ref. 27, p. 2).

There is a storm water channel approximately 100 yards northwest of the Site that is typically dry (Ref. 13, p. 3). Review of Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) flood map for the area shows that the Site is in a no flood zone (Ref. 28)

3.3.2 Surface Water Use

Consumptive use of the surface water supply available from Elephant Butte Reservoir is exclusively irrigated agriculture. All surface water demands for irrigation under the Elephant Butte Irrigation District (EBID) are met by water delivered by EBID (Ref. 27)

3.3.3 Surface Water Investigation

The surface water pathway assesses the threat to human health and the environment by determining whether hazardous substances are likely to have been released to surface water; and

5.0 References

1 Environmental Protection Agency, 1990. Revised Hazard Ranking System. November 1990. 11 pages.

2 Environmental Protection Agency, 2004. Superfund Chemical Data Matrix. January 2004. 36 pages.

3 New Mexico State University, 2008. Climate Summary. January 7, 2008. 1 page. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nmstat

4 New Mexico Environment Department 2006. Past and Current Leak Sites by City February 24, 2006. 9 pages. http://www.nmenv.state.nm.us/ust/leakcity.html

5 Las Cruces Business Directories 1960,1965, 1968, 1973, 1978, 1980, 1985, 1990. 8 pages

6 Environmental Protection Agency, 2008. Superfund Site Progress Profile Griggs & Walnut Groundwater Plume. January 8, 2008. 1 page. http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0605116

7. New Mexico Environment Department, 2001. NPL Site Narrative for Griggs & Walnut Ground Water Plume. January 11, 2001. 3 pages.

8 Environmental Protection Agency, 2007. Drinking Water Contaminants. September 10, 2007. 12 pages. http://www.epa.gov/safewater/contaminants/index.html

9 New Mexico Environment Department, 2006. 20.6.2 NMAC New Mexico Water Quality Control Commission Regulations. July 16 2006. 3 pages

10 Environmental Protection Agency, 2006. Remedial Action Contract. November 2006. 2 pages.

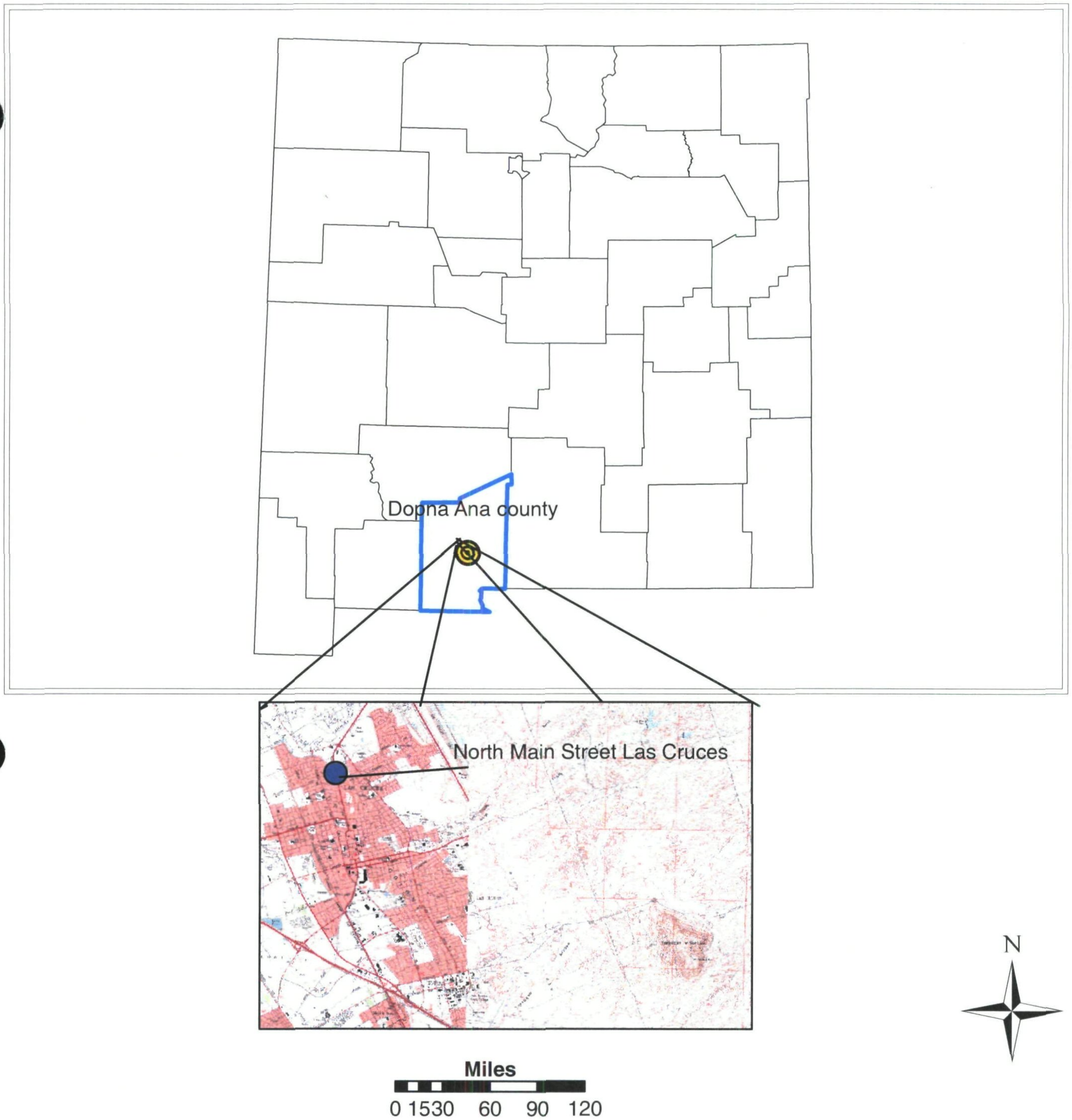
11 New Mexico Environment Department, 2007. Preliminary Assessment Report Main and Alameda Solvents Site. December 2007. 3 pages

12 Record of Communication. 2008. Ruth Horowitz and Chris Holmes. February 15, 2008. 1 page.

13 Raba-Kistner Consultants (SW) Inc. 1998. On Site Investigation Report Scotts Auto Sales. May 4, 1998. 18 pages.

28 Natural Resources Conservation Service. 2008. Flooding Frequency Class-Dona Ana County Area New Mexico. April 10, 2008. 4 pages.

Figure 1: Site Location Within New Mexico



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Location of the North Main Street Las Cruces Site

- Figure 2. Overview of Site. Location of nearby schools and CERCLA sites to the North Main Street Las Cruces Site.

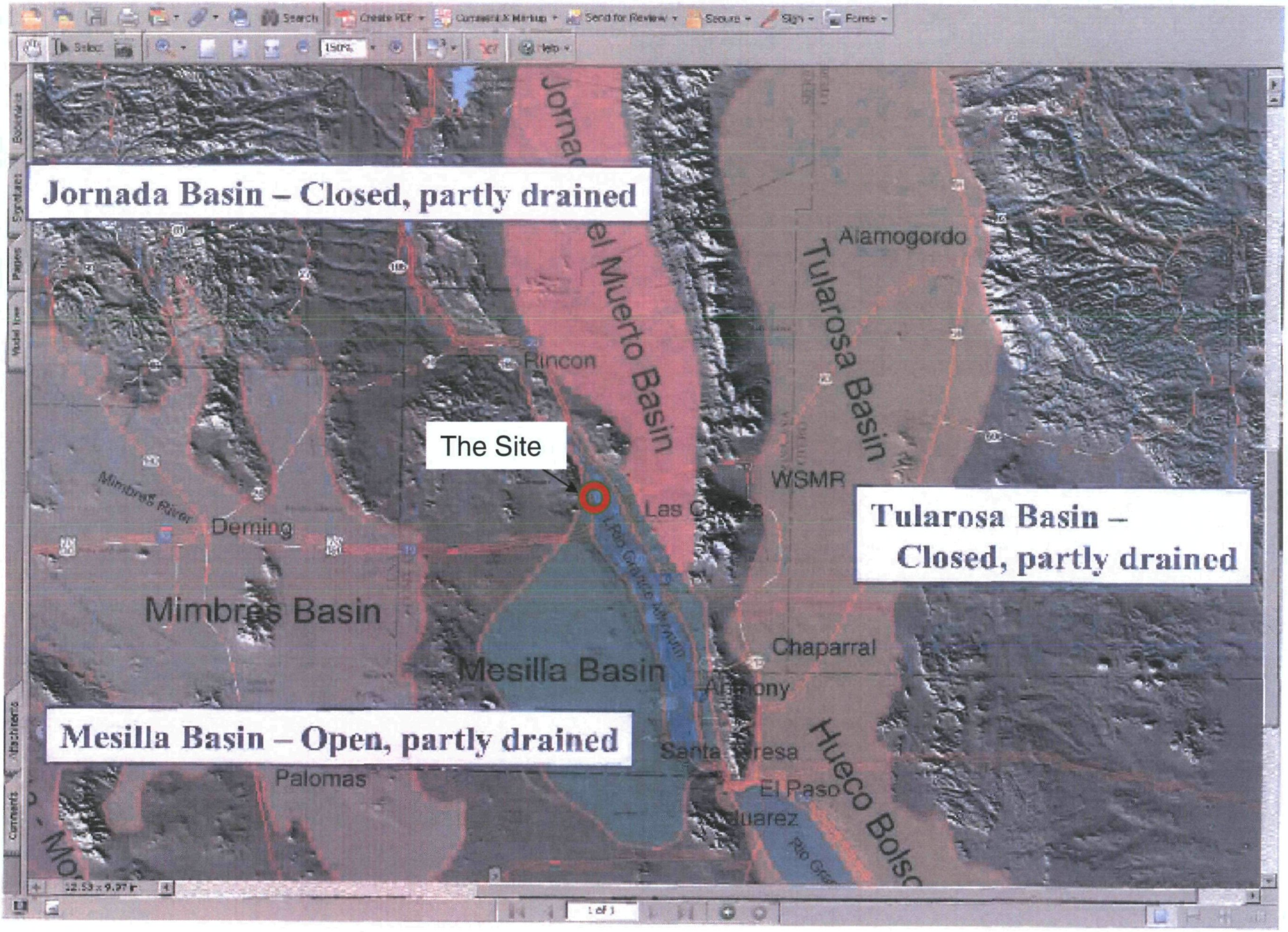
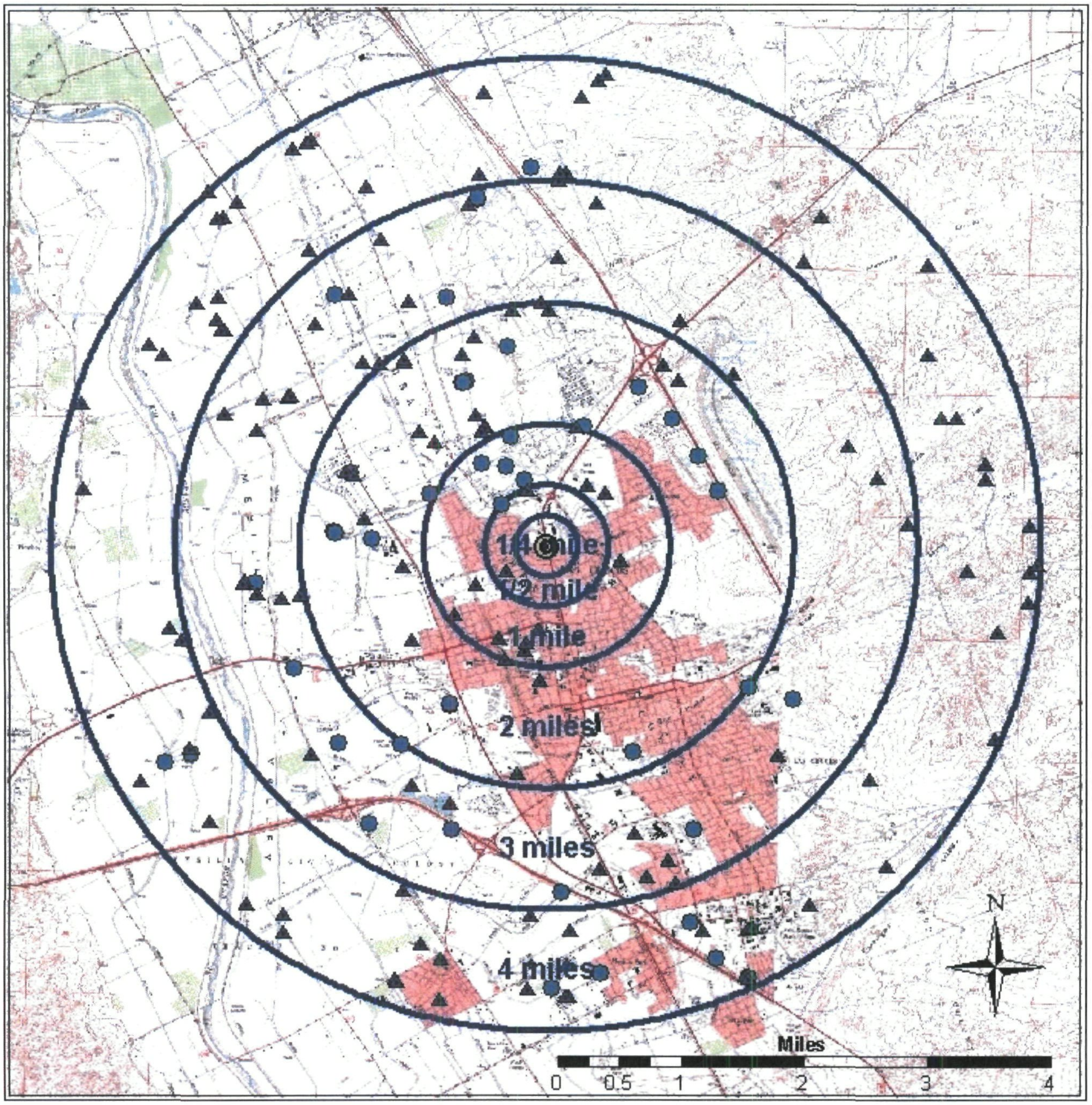


Figure 3. Site Regional Hydrogeology



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Site

Public Water Supply Wells

Private Well Permits With Office of the State Engineer

Figure 4. Four Mile Map

Table 1. Dry Cleaners Within a Four Mile Radius of the Site (Ref. 5)

Address	Business Directory Year	Approximate Distance From Site
500 N Main St	1960, 1965	1 mile south
833 N Church	1965	1 mile south
203 E Las Cruces Ave	1965, 1968	1.1 miles south
1355 E Idaho	1965, 1968, 1973	2.5 miles south by south east
120 W Picacho Ave	1965, 1968	0.6 miles south
1494 E Missouri Ave	1965, 1968, 1973, 1980, 1985	2.8 miles south by south east
2137 N Main	1965, 1968, 1973, 1978, 1980, 1985, 1990	0.2 miles north
1335 South Solano Drive	1968, 1973	2.5 miles south by south east
114 West Madrid	1968, 1973, 1978, 1980, 1985	0.3 miles north
705 N Main St	1973, 1978, 1980, 1985	0.7 miles south
1424 South Solano Drive	1973, 1978, 1980, 1985,1990	2.7 miles south by south east
2615 E Missouri Ave	1968, 1973, 1980, 1985, 1990	1.5 miles south
1047 North Main St	1980	0.5 miles south
2497 North Main St	1990	0.5 miles north
2001 East Lohman Ave	1990	2 miles south east
801 South Solano Dr	1990	3 miles south by south east

Distance from Site was determined by Google Earth

Table 2. VOC Results for Ground Water Samples Collected April 16, 1998 at Scott's Auto Sales 1835 North Main Street, Las Cruces (units in micrograms per liter (ug/L) (Ref. 13)

Contaminant	MW-1	MW-2	MW-3	WQCC	EPA MCL
1,2 dichloroethane (EDC)	**390**	ND	ND	10	5
Benzene	**19,000**	**180**	**64**	10	5
Toluene	**17,000**	**1,700**	ND	750	1000
Ethylbenzene	**4,000**	**5,100**	**1700**	750	700
m & p - Xylene	**11,000**	**3,400**	**310**		
o-Xylene	**6,100**	**5,400**	**660**	620 (Total Xylenes)	Total Xylenes
Styrene	**200**	**140**	ND	NA	100
Isopropylbenzene	**190**	**250**	240	NA	NA
2-Chlorotoluene	ND	92	100	NA	NA
n-Propylbenzene	510	640	700	NA	NA
1,2,4-Trimethylbenzene	3200	2900	3500	NA	NA
1,3,5-Trimethylbenezene	820	820	900	NA	NA
tert-Butylbenzene	ND	ND	460	NA	NA
sec-Butylbenzene	ND	ND	58	NA	NA
4-Isopropyltoluene	ND	390	ND	NA	NA
Napthalene	**1,100**	**1,200**	**1000**	30 (Total)	NA

Bold-exceeds WQCC or EPA maximum contaminant level
MCL-maximum contaminat level
WQCC-New Mexico Water Quality Control Commission human health standard
ND-Non Detect
MTBE-Methyl Tertiary Butyl Ether.

Table 3. VOC Results for Ground Water Samples Collected April 6-7, 1999 at BF-22 1900 North Main St. Las Cruces (Ref. 14)

Contaminant	BF-22-1	BF-22-2	BF-22-3	BF-22-4	BF-22-5	BF-22-7	WQCC	EPA MCL
Bromoform	ND	ND	ND	1	1	<100	NA	NA
n-Butylbenzene	ND	2.2	ND	2.2	ND	<100	NA	NA
sec-Butylbenzene	ND	6.6	8.6	4.5	ND	<100	NA	NA
Benzene	ND	ND	**19**	ND	ND	**230**	10	5
1,2-Dibromoethane (EDB)	ND	ND	**1.1**	ND	**1.1**	<100	0.1	0.05
Ethylbenzene	ND	ND	38	14	ND	**3,100**	750	700
Hexachlorobutadiene	ND	ND	ND	1.8	2.1	<100	NA	NA
Isoprpylbenzene	ND	ND	ND	2.1	ND	140	NA	NA
Naphtalene	5.1	ND	4.3	6.7	4	**470**	30 (Total)	NA
n-propylbenzene	ND	ND	4	4	ND	380	NA	NA
1,1,2,2-Tetrachloroethane	ND	ND	2.2	1.5	1.6	<100	10	NA
Tertachloroethene	1.8	ND	ND	ND	1.6	<100	20	5
Toluene	ND	ND	ND	ND	ND	290	750	1,000
1,2,3 Trichlorobenzene	ND	ND	ND	3.3	2	<100	NA	NA
1,2,4 Trichlorobenzene	ND	ND	ND	ND	1.4	<100	NA	NA
1,2,4-Trimethylbenzene	ND	ND	3	ND	ND	550	NA	NA
1,3,5-Trimethylbenzene	ND	ND	3.9	ND	ND	210	NA	NA
Xylenes (Total)	ND	ND	2	ND	ND	**4300**	620	10,000
MTBE	ND	ND	1	1.2	1.5	<100	NA	NA

Bold - exceeds WQCC or EPA maximum contaminant level
MCL- Environmental Protection Agency maximum contaminant level
WQCC New Mexico Water Quality Control Commission human health standard
ND- Non Detect
MTBE- Methyl Tertiary Butyl Ether

Table 4. VOC Contamination Found in Ground Water Samples Taken March 13, 2003 from Scott's Auto Sales (Ref. 15)

Contaminant	**MW-1**	**MW-3**	**MW-5**	**MW-6**	**MW-7**	**MW-9**	**MW-11**	WQCC	EPA MCL
Methyl-t-butyl Ether	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	NA	NA
Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.4	10	5
Ethylbenzene	12	98	<1.0	<1.0	<1.0	<1.0	<1.0	750	700
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	750	1,000
m&p Xylenes	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	620	NA
0-Xylene	8.8	4.2	<1.0	<1.0	<1.0	<1.0	<1.0	(total)	NA
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	100
Isopropyl Benzene	1.1	21	4.2	<1.0	<1.0	<1.0	1	NA	NA
n-Propylbenzene	3.1	46	10	<1.0	<1.0	<1.0	<1.0	NA	NA
1,3,5 Trimethylbenzene	3.4	29	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA
1,2,4 Trimethylbenzene	1.9	32	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA
sec butylbenzene	<1.0	5.4	8.5	<1.0	<1.0	<1.0	<1.0	NA	NA
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA
n-Butylbenzene	<1.0	2.5	<1.0	<3.0	<3.0	<1.0	<1.0	NA	NA
Naphtalene	6.1	61	3	<3.0	<3.0	<3.0	<3.0		NA
2-Methylnaphtalene	5.6	52	23	<5.0	<5.0	<5.0	<5.0	30 (total)	NA
1-Methylnaphtalene	<1.0	50	24	<5.0	<5.0	<5.0	10		NA

all units are microgram per liter (μg/L)

Bold - exceeds WQCC or EPA maximum contaminant level
MCL- Environmental Protection Agency maximum contaminant level
WQCC New Mexico Water Quality Control Commission human health standard
ND- Non Detect
MTBE- Methyl Tertiary Butyl Ether

Table 5. VOC Contamination Found in Ground Water Samples Taken March 13, 2003 at Bar-F-22 (Ref. 15)

Contaminant	BF-22-2	BF-22-3	BF-22-4	BF-22-7	WQCC	EPA MCL
Methyl-t-butyl Ether	5	41	1.2	19	NA	NA
Benzene	**88**	**3100**	**18**	**72**	10	5
Ethylbenzene	51	**1800**	5.1	**980**	750	700
Toluene	<1.0	340	9.5	110	750	1,000
m&p Xylenes	<1.0	**4900**	23	340	620	NA
0-Xylene	<1.0	**1300**	11	72	(total)	NA
Isopropyl Benzene	8.3	120	1.9	41	NA	100
n-Propylbenzene	16	290	1.3	100	NA	NA
1,3,5 Trimethylbenzene	6.3	790	6	66	NA	NA
1,2,4 Trimethylbenzene	1.6	3000	17	240	NA	NA
sec-Butylbenzene	13	27	5.3	6.9	NA	NA
n-Butylbenzene	2.5	57	1.1	9.4	NA	NA
Naphtalene	3.5	**970**	**8.1**	**290**		NA
2-Methylnaphtalene	<5.0	**510**	**6.7**	**56**	30 (total)	NA
1-Methylnaphtalene	87	**310**	**80**	**90**		NA

Table 6. VOC Contamination Found in Ground Water Samples Taken March 13, 2003 at North Main Self Serve (Ref. 15)

Contaminant	MW-1	MW-6	WQCC MCL	EPA MCL
Methyl-t-butyl Ether	4.1	<1.0	NA	NA
Benzene	**150**	<1.0	10	5
Ethylbenzene	310	<1.0	750	700
Toluene	300	<1.0	750	1,000
m&p Xylenes	510	<1.0	620	NA
0-Xylene	410	<1.0	(total)	NA
Isopropyl Benzene	22	<1.0	NA	100
n-Propylbenzene	67	<1.0	NA	NA
1,3,5 Trimethylbenzene	110	<1.0	NA	NA
1,2,4 Trimethylbenzene	380	<1.0	NA	NA
p-Isopropyltoluene	3.8	<1.0	NA	NA
n-Butylbenzene	21	<1.0	NA	NA
Naphtalene	**120**	<3.0		NA
2-Methylnaphtalene	**110**	<5.0	30 (total)	NA
1-Methylnaphtalene	**57**	<5.0		NA

all units are micrograms per liter (μg/L)
Bold - exceeds WQCC or EPA maximum contaminant level
MCL- maximum contaminant level
WQCC New Mexico Water Quality Control Commission human health standard
ND- Non Detect
MTBE- Methyl Tertiary Butyl Ether

Table 7. VOC Contamination Found in Ground Water Samples Taken June 6, 2006 at the North Main Street Site (Ref. 16)

Contaminant	ScottsMW-9	ScottsMW-13	Sharp MW-8	Sharp MW-9	Sharp MW-10	Sharp MW-11	WQCC	EPA MCL
Benzene	<1.0	<1.0	<1.0	**6.5**	**45**	**12**	10	5
Ethylbenzene	<1.0	1.5	<1.0	22	180	74	750	700
Toluene	<1.0	<1.0	<1.0	1.2	9.6	1.2	750	1,000
m&p Xylenes	<2.0	8.1	<2.0	53	240	62	Total Xylenes	Total Xylenes
0-Xylene	<1.0	14	<1.0	16	88	3.3	620	10000
Isopropyl Benzene	<1.0	1	<1.0	1.7	14	8.6	NA	NA
n-Propylbenzene	<1.0	3.1	<1.0	3.3	33	6.6	NA	NA
1,3,5 Trimethylbenzene	<1.0	12	<1.0	10	57	12	NA	NA
1,2,4 Trimethylbenzene	<1.0	18	<1.0	18	180	25	NA	NA
sec butylbenzene	<1.0	<1.0	<1.0	<1.0	2.3	1.9	NA	NA
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	3.9	<1.0	NA	NA
Naphtalene	<3.0	3.3	<3.0	<3.0	**43**	3.4	Total	NA
2-Methylnaphtalene	<5.0	<5.0	<5.0	<5.0	**11**	<5.0	Naphtalenes	NA
1-Methylnaphtalene	<5.0	7.4	<5.0	<5.0	**11**	<5.0	30	NA

all units are micrograms per liter (μg/L)
Bold - exceeds WQCC or EPA maximum contaminant level
MCL- Environmental Protection Agency maximum contaminant level
WQCC New Mexico Water Quality Control Commission human health standard
ND- Non Detect
MTBE- Methyl Tertiary Butyl Ether

REFERENCE 1

United States Environmental Protection Agency
Office of Solid Waste and Emergency Response
Publication 9320.7-03FS
November 1990

EPA

The Revised Hazard Ranking System: Background Information

Office of Emergency and Remedial Response
Hazardous Site Evaluation Division (OS-230)
Quick Reference Fact Sheet

The U.S. Environmental Protection Agency (EPA) has revised the Hazard Ranking System (HRS) in response to the Superfund Amendments and Reauthorization Act of 1986 (SARA). The HRS is the scoring system EPA uses to assess the relative threat associated with the release or potential release of hazardous substances from a waste site. The HRS score is the primary criterion EPA uses to determine whether a site should be placed on the National Priorities List (NPL). The NPL identifies sites that warrant further investigation to determine if they pose risks to public health or the environment. Sites on the NPL are eligible for long-term "remedial action" financed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by SARA. SARA authorizes a "Hazardous Substances Superfund" totalling $8.5 billion over 5 years to pay costs not assumed by those responsible for problems at a site. The HRS uses data that can be collected relatively quickly and inexpensively, thus allowing most Superfund resources to be directed to remedial actions at sites on the NPL.

Summary of Revisions

The revised HRS retains the same cutoff score and basic approach as the original HIRS, while incorporating SARA requirements as well as improvements identified as necessary by EPA and the public. The revised HRS retains the ground water, surface water, and air pathways, drops the direct contact and fire/explosion pathways, and adds a fourth pathway, soil exposure.

Several key provisions of the revised HRS make it more comprehensive. They:

! Evaluate new exposure pathways or threats that assess direct contact of people with contaminated soils, and contamination of the aquatic food chain.

! Expand how toxicity is evaluated, considering not only acute health effects, but also carcinogenic and chronic noncarcinogenic effects.

! Increasethesensitiveenvironmentsconsidered fromjust wetlands and endangered species to environments designated by various Federal and State agencies.

! Evaluate the potential for air to be contaminated and for contaminated ground water to enter surface water.

Other provisions make the revised HRS **more accurate.** They:

! Allow use of concentration data to determine the quantity of waste at a site.

! Assign higher scores when people are actually exposed to contamination than when they are potentially exposed.

! Assign higher scores to potentially exposed people and sensitive environments closest to a site, with scores decreasing as distance from a site increases.

The complexity and scope of the issues involved in revising the HRS required EPA to got widespread input. EPA sought information from a number of sources such as its Science Advisory Board and, on three occasions, requested public comment: before drafting the revisions, after proposing the revisions in the Federal Register, and after publishing a Field Test report describing how the revisions scored actual hazardous waste sites. These procedures generated over 2,500 comments (from approximately

145 commenters). The majority of the commenters believed that the revised HRS represented an improvement over the original HRS. Other commenters, however, believed that the data required were too extensive for a screening tool and raised numerous technical issues. EPA made significant changes based on these comments, as well as on the Field Test. The result is a revised HRS that is a practical and effective tool in identifying the nation's worst hazardous waste sites.

Sara Requirements

SARA required that EPA modify the HRS so that, "to the maximum extent feasible, [it] accurately assesses the relative degree of risk to human health and the environment posed by sites." Several specific requirements were spelled out.

Section 105 required EPA to:

! Assess human health risks associated with contamination or potential contamination of surface waters, either directly or as a result of run-off. This assessment should take into account the use of these waters for recreation and the potential migration of any contaminant through surface water to downstream sources of drinking water.

! Evaluate damage to natural resources that may affect the human food chain.

! Assess contamination or potential contamination of ambient air.

Section 118 required EPA to:

! Give a high priority to sites where contamination has resulted in the closing of drinking water wells, or has contaminated a principal drinking water supply.

Section 125 required EPA to:

! Revise the HRS to assure appropriate consideration of sites that contain substantial volumes of wastes described in Section 3001(b)(3)(A)(i) of the Solid Waste Disposal Act, also known as the Resource Conservation and Recovery Act (RCRA). These wastes include fly ash, bottom ash, slag, and waste from control of flue gas emissions, all generated primarily by combustion of coal or other fossil fuels. The assessment must consider:

! Quantity, toxicity, and concentrations of hazardous constituents present in such wastes.

! Extent of, and potential for, release of such constituents into the environment.

! Degree of risk to human health and the environment posed by such constituents.

Original HRS

The original HRS used a structured value analysis approach to scoring site. This approach assigned numerical values to factors that relate to or indicate risk based on conditions at the site. The factors were grouped into three categories -- observed release/route characteristics, waste characteristics, and targets -- and were combined to obtain category scores. Each category had a maximum value, as did each component factor.

The category scores in the original HIRS were then multiplied together within each of the migration pathways (ground water, surface water, and air) and normalized to obtain a pathway score. Finally, the scores for the three pathways (gw, sw, a) were combined using a root-mean-square approach. The final HRS score was the square root of the sum of the squares of the pathway scores divided by a factor, 1.73, which put all final scores on a scale of 0-100.

$$HRS = \frac{\sqrt{S^2_{gw} + S^2_{sw} + S^2_{a}}}{1.73}$$

If all migration pathway scores were low, the HRS score was low. However, the HRS score could be relatively high even if only one pathway score was high. This was an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one migration pathway. For example, buried leaking drums of hazardous substances could contaminate drinking water wells but -- if the drums were deep enough and the substances not very volatile -- not surface water or air.

Revised HRS

A number of major changes from the original HRS involve more than one of the four pathways. They are summarized before the individual pathways are discussed.

Structure. The revised HRS retains the three migration pathways. An EPA analysis of remedial actions at NPL sites indicates that some significant risks from direct contact may not have been completely addressed by removal actions, and these risks should be of concern in determining priorities for remedial action. Therefore, a fourth pathway, soil exposure (named onsite exposure in the proposed revisions), is now included in the total site score. The pathway assesses direct human exposure to hazardous substances or contaminated soil. The direct contact and fire/explosion pathways have been deleted.

The essential structural features of the revised HRS generally remain the same as those of the original HRS - that is, relative risks continue to be evaluated using pathways, three factor categories (likelihood of release, waste characteristics, and targets), and factors -- and the score is calculated similarly.

$$HRS = \sqrt{\frac{S^2_{gw} + S^2_{sw} + S^2_{s} + S^2_{a}}{4}}$$

Every factor has been revised or is new in the revised HRS. A few factors have been eliminated, either because they did not discriminate among sites or because they were replaced by more accurate measures.

Key changes were made in the waste characteristics factor category; the hazardous waste quantity factor is now multiplied by toxicity and other factors, instead of being added as they were in the original HRS. This is one of several changes that make the revised HRS more consistent with risk assessment principles.

Observed Release. The original HRS scored an observed release if the measured concentration of the hazardous substance was significantly above the background level and if that concentration could reasonably be attributed to the site. EPA is retaining this approach to scoring observed releases in all four pathways but has incorporated criteria for determining when a release is significantly above background.

Hazardous Waste Quantity. Hazardous wastes, in addition to including hazardous substances, almost always include nontoxic substances. When the original HRS was developed, EPA judged that the cost during initial investigations (preliminary assessments and site inspections) of reliably determining the amount of hazardous constituents within the hazardous waste was prohibitive and, in some cases, not feasible. Therefore, the original HRS used the total quantity of waste containing hazardous substances (as defined in CERCLA Section 101), excluding any wastes that were contained so that they could not migrate.

The revised HRS uses a tiered approach to determine the hazardous waste quantity factor. Hazardous constituent concentration data, mass of Waste as deposited, volume, or surface area of the source can be used. This approach provides the flexibility to use the best data available.

Toxicity. Toxicity, a factor in the waste characteristics category for all four pathways, is intended to represent the relative potential of a substance to cause adverse health effects.

The original HRS assigned a toxicity factor value from 0 to 3 based on the toxicity ratings developed by N.I. Sax or the National Fire Protection Association rating scheme. Both ratings primarily emphasized acute toxicity of a substance. However, EPA's experience has been that adverse health effects at hazardous waste sites may result from carcinogenic and chronic noncarcinogenic. exposures as well as acute exposures.

The revised HRS evaluates three measures of toxicity in a tiered approach that uses acute data only when the other data are not available. The three measures are:

! Cancer risks based on two factors that

EPA's Carcinogen Assessment Group has developed for a variety of substances:

- Cancer potency factors (also referred to as slope factors) derived from experimental animals or human epidemiologic data, if available.
- Qualitative weight-of-evidence – that is, the overall strength of the data indicating potential carcinogenicity.

- Noncancer effects of chronic exposure, based on verified Reference Doses (RfDs), the estimated amount of a substance to which the human population (including sensitive subgroups) can be exposed on a daily basis over a lifetime without an appreciable risk of harmful noncancer effects. RfDs undergo a formal EPA-wide review and verification.
- Acute toxicity, based on the LD_{50} or LC_{50} (lethal dose or lethal concentration at which 50 percent of experimental animals exposed die).

Targets (People and Sensitive Environments). In the original HRS, the people actually exposed to contamination did not count more than those potentially exposed, nor was the level of exposure considered. To assess risks more accurately, the revised HRS gives greater weight to actual exposures by.

- Adding factors to the ground water, surface water, and air pathways reflecting risks to the nearest exposed individual -- that is, the person who is closest to the site and so is expected to be exposed to the highest concentration of contaminants.
- Giving greater weight to people whose drinking water is contaminated (or, for the soil exposure pathway, people living, working, or going to school on contaminated soil). The evaluation of exposed target populations in both the ground water and surface water pathways includes a weighting factor based on the Federal primary drinking water standards, or some other health-based benchmark if no standard exists.
- Giving greater weight in the surface water pathway to actual contamination of the aquatic human food chain.

Where no actual exposure has been documented, the people potentially exposed are distance weighted in the ground water and air pathways and dilution weighted in the surface water pathway.

The revised HRS also replaces the use factor of the original HRS with a more comprehensive resources factor that considers recreational and other uses in the ground water, surface water, and air pathways.

Environmental Threats. In developing the original HRS, EPA decided, given the need to set priorities for the spending of limited monies, to place greater weight on sites that posed threats to public health rather than to the environment. EPA's experience since then, however, suggested that a number of sites posing a serious threat to the environment were not scoring high enough to be on the NPL, and that some of the most serious threats dearly warrant remedial action. Therefore, the revised HRS gives greater weight than the original HRS to impacts on sensitive environments (wetlands, for example) in the surface water and air pathways. Sensitive environments are also considered in the soil exposure pathway. Relative risks to human health, however, are still weighted more heavily than sensitive environments. In addition, the revised HRS expands significantly the types of sensitive environments evaluated at a site.

Radionuclides. The revised HRS includes a special section (Section 7) on scoring radionuclides that allows for a parallel evaluation of radionuclides.

Ground Water Migration Pathway

The ground water migration pathway in both the original and revised HRS (Figure 1) evaluates the Likelihood that hazardous substances at a site or facility will migrate through the ground below and contaminate aquifers (underground formations holding usable amounts of water) and any drinking water wells that draw on those aquifers.

The revised HRS ground water pathway has the same general structure as in the original HRS. However, every factor has been revised. The most significant revision assigns weights to the target population based on distance from the site to account for dilution in the aquifer. In addition, the area (target distance limit) in which drinking water wells are considered has been expanded. A new factor, travel time, has been added to the potential-to-release calculations. In the waste characteristics category, the mobility of each hazardous substance is considered, rather than persistence as in the original HRS.

The original HRS did not consider the direction of ground water flow in determining which populations or environments could be affected by the migration of hazardous substances at the site. The targets category gave equal weight to the entire population drawing water within 3 miles of the site.

After evaluating several options for considering ground water or contaminant flow direction, EPA decided to retain the original system, based on cost and technical considerations. Accurately determining local flow within the target distance would require considerable expenditure of time and public funds, which EPA believes is justified only at the nation's highest priority sites -- that is, those already on the NPL However, where there is known contamination, the populations are weighted higher than those only potentially exposed. Thus, the revised FIRS indirectly considers direction of substance migration by assigning weights to people drinking water contaminated either above or below health-based benchmarks and by using the nearest exposed individual factor.

Likelihood of Release. The potential-to-release to ground water is comparable to the route characteristics/containment portion of the original HRS. EPA has made a number of changes in how potential releases are scored. In the original HRS, values for depth to aquifer, net precipitation, permeability, and physical state were added, then multiplied by the value of a fifth factor, containment. The revised HRS uses four factors:

! Containment, which measures the means

Figure 1

Groundwater Migration Pathway

Original HRS

Likelihood of Release	x	Waste Characteristics	x	Targets
Observed Release or Route Characteristics Depth to Aquifer of Concern Net Precipitation Permeability of Unsaturated Zone Physical State Containment		Toxicity/Persistence Hazardous Waste Quantity		Groundwater Use Distance to Nearest Well/ Population Served

Revised HRS

Likelihood of Release	x	Waste Characteristics	x	Targets
Observed Release or Potential to Release: Containment Net Precipitation Depth to Aquifer Travel Time		Toxicity/Mobility Hazardous Waste Quantity		Nearest Well Population Resources Wellhead Protection Area

taken at a site to minimize or prevent releases of contaminants into ground water.

- Net precipitation, which indicates the amount of water available to infiltrate into ground water.

- Depth to aquifer, which provides a measure of the time required for a contaminant to reach the underlying aquifer.

- Travel time, which measures the potential of geologic materials to slow the migration of contaminants to aquifers.

The potential to release is the sum of the values of the first three factors multiplied by the value for containment.

Waste Characteristics. The waste characteristics category of the original HRS included toxicity/persistence and hazardous waste quantity factors. The method used to evaluate persistence, however, was based on biodegradability and was generally not applicable to ground water. In addition to the changes in waste quantity and toxicity, the revised HRS replaces persistence with a mobility factor reflecting the rate at which a substance migrates. Combining mobility with the revised toxicity factor allows for discrimination among highly toxic substances that migrate at very different rates.

Targets. The targets category reflects the population potentially at risk from an actual or potential release of hazardous substances from the site to an aquifer. The revised HRS expands the target distance limit from 3 to 4 miles. Within that limit, four factors (instead of two) are considered: nearest well, population, resources, and Wellhead Protection Area.

The nearest well is a new factor in the targets category and is evaluated by measuring the distance to the nearest drinking water well. In the original HRS, the person using the nearest well was considered in a matrix with population. The two are now separate factors.

The second factor, population, indicates the number of people actually or potentially at risk from exposure to hazardous substances in drinking water wells. In the original HRS, all the people who drank water from wells within 3 miles of the site were counted equally. The total population was then combined in a matrix with distance to the nearest well to assign a single value. The revised HRS separates these factors to more clearly reflect individual risks and resource value/population risk. Population served is the sum of three groups:

- People exposed to contamination above health-based benchmarks -- for example, Federal drinking water standards.

- People exposed to contamination not above health-based benchmarks but significantly above background.

- People potentially exposed, weighted for distance.

The resources factor, a more comprehensive measure, has replaced the ground water use factor in the original HRS.

The presence of a Wellhead Protection Area, as designated under Section 1428 of the Safe Drinking Water Act, is a new factor in the targets category score. This revision addresses SARA Section 118, which requires a high priority for sites affecting principal drinking water supplies. Wellhead Protection Areas are defined as areas around a welt or well field supplying a public water system through which potentially harmful contaminants are likely to move toward and reach the welt or well field.

Surface Water Migration Pathway

The surface water migration pathway in both the original and revised HRS (Figure 2) evaluates the likelihood that runoff containing hazardous substances from a site can move through surface water and affect people or the environment. The revised HRS differs from the original HRS in several ways. The revised HRS:

- Replaces route characteristics with two potential-to-release components -- overland flow/flood and ground water to surface water. If both components are scored, the pathway score is the higher of the two scores.

- Divides the surface water pathway into three subpathways representing threats to drinking water, the human food chain, and the environment. The surface water migration pathway score is the sum of the scores of the three subpathways. This change in structure provides a relatively simple way to account for the different substances and targets that may be important for the different types of potential exposure in the subpathways.

Figure 2

Surface Water Migration Pathway

Original HRS

Likelihood of Release x Waste Characteristics x Targets

Likelihood of Release

Observed Release
or
Route Characteristics
- Facility Slope/Intervening Terrain
- 1-Year, 24-Hour Rainfall
- Distance to Nearest Surface Water
- Physical State
- Containment

Waste Characteristics

Toxicity/Persistence
Hazardous Waste Quantity

Targets

Surface Water Use
Distance to Sensitive Environment
Population Served/Distance to Nearest Intake Downstream

Revised HRS

Likelihood of Release:

Overland/Flood Component

Observed Release
or
Potential to Release

By Overland Flow:
- Containment
- Runoff
- Distance to Surface Water

By Flood:
- Containment
- Flood Frequency

or

Ground Water to Surface Water Component

Observed Release
or
Potential to Release

- Containment
- Net Precipitation
- Depth to Aquifer
- Travel Time

x

Drinking Water Threat

Waste Characteristics x Targets

Waste Characteristics: Toxicity/Persistence/Mobility*; Hazardous Waste Quantity

Targets: Nearest Intake; Population; Resources

+

Human Food Chain Threat

Waste Characteristics x Targets

Waste Characteristics: Toxicity/Persistence/Bioaccumulation/Mobility*; Hazardous Waste Quantity

Targets: Food Chain Individual; Population

+

Environmental Threat

Waste Characteristics x Targets

Waste Characteristics: Ecosystem Toxicity/Mobility*/Persistence/Bioaccumulation; Hazardous Waste Quantity

Targets: Sensitive Environments

**Mobility applicable only to Ground Water to Surface Water Component.*

! Extends the distance to the targets at risk from the probable point where hazardous substances enter the surface water to a point 15 miles from the source (versus 3 miles downstream of the farthest observed contamination, or 1 mile in static water, in the original HRS). The target values are modified by dilution weighting -- that is a lower value is assigned to a larger body of water because the substance is more diluted.

Drinking Water Threat. The drinking water threat in the revised HRS retains the waste quantity and toxicity/persistence factors of the original HRS but evaluates them differently. Persistence is no longer based solely on biodegradation but on four additional decay processes (hydrolysis, photolysis, volatilization, and free-radical oxidation). For each hazardous substance in (or likely to be in) surface water, a persistence value is assigned that reflects the time the substance remains in the surface water. The substance with the highest toxicity/persistence value is used, along with the hazardous waste quantity, in calculating the waste characteristics score.

The drinking water targets category in the revised HRS retains the use and population factors of the original HRS but substantially modifies them. Instead of the four uses in the original HRS use factor, with only the highest assigned a value, two uses (drinking water and other uses) are assigned values, providing a better evaluation of the risk to the resource. The distance to a surface water intake in the original HRS has been replaced with a nearest intake factor that is evaluated separately and is based on dilution at the nearest intake. As in the revised ground water pathway, the population served is evaluated in three groups based on actual and potential exposure. The population potentially exposed is weighted based on dilution.

Human Food Chain Threat. SARA Section 105(a)(8)(A) requires EPA, in revising the HRS, to consider the effects of hazardous waste sites on the human food chain. In developing the revisions, EPA determined that the most significant, measurable food chain risks involved contamination of the aquatic food chain. Therefore, the revised surface water migration pathway includes evaluation of the human food chain based on potential or observed contamination of aquatic food chain organisms.

In evaluating waste characteristics (and targets as well), a single hazardous substance is selected, on the basis of bioaccumulation potential, toxicity, and persistence, from among those known to be present at the site and available to the surface water migration pathway. Persistence is determined based on the same five decay processes as in the drinking water threat.

The targets category reflects the threat to people from consumption of fish and shellfish taken from the surface water migration pathway. Fishery use -- for example, commercial, subsistence, or sport fishing--is evaluated to give an estimate of resource value. Population is calculated by estimating food chain products harvested from the contaminated surface water. Population is the sum of actual and potential contamination, and is determined based on bioaccumulation and annual production of each fishery in the surface water migration pathway.

Environmental Threat. In the surface water pathway of the original HRS, sensitive environments were assigned a value in the targets category on the basis of distance to a particular type of sensitive environment -- wetlands, for example. The revised HRS places more emphasis on environmental damage and expands the types of environments considered. Ecosystem toxicity is determined using EPA chronic water quality criteria for the protection of aquatic life (or other measures if the criteria are not available). Ecosystem persistence is evaluated as it is for the drinking water subpathway. The sensitive environments targets are weighted into groups based on ecologically-based benchmarks where sensitive environments are contaminated; otherwise, dilution factors are applied.

Soil Exposure Pathway

The soil exposure pathway (Figure 3) evaluates the potential threats posed by direct, physical contact with hazardous wastes or contaminated soil. It is similar to the direct contact pathway, which was scored in the original HRS but was not used to determine if a site should be on the NPL. The revised HRS evaluates the threat by looking at two groups potentially at risk -- those living on property with hazardous wastes or contaminated soils and those living nearby with access to the property. The resident population is evaluated based only on presence of contamination within the site boundary and within 200 feet of the boundary. The resident population is not evaluated on release potential, as in the other pathways, because contaminants do not have to migrate offsite for exposure to occur. Five targets are evaluated in the resident population:

! Resident individual -- a person living on, or

Figure 3

Soil Exposure Pathway (Revised HRS Only)

Resident Population Threat

Likelihood of Exposure x	Waste Characteristics x	Targets
Observed Contamination	Toxicity Hazardous Waste Quantity	Resident Individual Resident Population Workers Resources Terrestrial Sensitive Environments

+

Nearby Population Threat

Likelihood of Exposure x	Waste Characteristics x	Targets
Attractiveness/Accessibility Area of Contamination	Toxicity Hazardous Waste Quantity	Population Within 1 Mile Nearby Individual

going to school or day care on, contaminated property.

! Resident population – people living on or going to school or day care on contaminated property.

! Workers – people working on contaminated property.

! Resources – contaminated property used for commerce, agriculture, silviculture, livestock production, or livestock grazing.

! Terrestrial sensitive environments on contaminated property – aquatic environments are considered in the surface water migration pathway.

The nearby population is evaluated on the basis of:

! Attractiveness/accessibility and area of contamination, which evaluate the likelihood of exposure.

! Population within a 1-mile travel distance

! of the site.

! Nearby Individual.

Air Migration Pathway

The air migration pathway of the revised HRS (Figure 4) has the same three categories as the original HRS, but each is revised. The original air pathway was evaluated only if an observed release of hazardous substances could be documented. As required by SARA Section 105(a)(8)(A), the revised HRS considers characteristics of the site to assess the potential for release if none has been documented. The likelihood of release is determined, as well as how many people and sensitive environments could be exposed to hazardous substances carried in the air and the inherent hazard associated with potential exposures. The potential to release by gases and particulates is evaluated separately based on:

! Containment, which assesses the ability of natural or constructed barriers to inhibit the escape of hazardous substances from a source.

- ! Source type -- for example, containers (including tanks), contaminated soil (including land treatment), fire sites, landfills, surface impoundments, and waste piles.

- ! Migration potential, which reflects the relative tendency of hazardous substances contained in a source to migrate.

In addition to the changes to waste quantity and toxicity in the waste characteristics category discussed earlier, the reactivity and compatibility factors in the original HRS have been deleted because they have proved not to be applicable to the vast majority of NPL sites; mobility has been added. All hazardous substances at a site are evaluated for gas mobility. Particulate mobility is evaluated based on the local climate. The two values are combined in a matrix to determine the mobility factor.

In the revised HRS, the three target factors in the original HRS -- land use, population within a 4-mile radius, and distance to a sensitive environment -- have been modified, and a factor has been added to reflect the risk to the nearest individual. The 4-mile limit for population in the original HRS has been retained, the limit for sensitive environments evaluated has been extended from 2 to 4 miles. In both cases, distance weighting factors are used to represent the reduced concentrations farther away from the site.

Figure 4

Air Migration Pathway

Original HRS

Likelihood of Release	x	Waste Characteristics	x	Targets
Observed Release		Toxicity Reactivity and Incompatibility Hazardous Waste Quantity		Land Use Population Within 4-Mile Radius Distance to Sensitive Environment

Revised HRS

Likelihood of Release	x	Waste Characteristics	x	Targets
Observed Release or Potential to Release Gas Gas Containment Gas Source Type Gas Migration Potential Particulate Particulate Containment Particulate Source Type Particulate Migration Potential		Toxicity/Mobility Hazardous Waste Quantity		Resources Population Within 4-Mile Radius Nearest Individual Sensitive Environments

Additional Considerations

In the preamble to the proposed revisions to the HRS, EPA requested comment on two issues:

- The cutoff score for proposing sites for the NPL.
- The policy of scoring sites based on current conditions.

Cutoff Score. EPA chose an HRS score of 28.50 as a cutoff for placing sites on the NPL because it yielded an initial NPL of at least 400 sites as suggested by CERCLA, not because EPA had determined that 28.50 represented a threshold of unacceptable risks. Believing that the current cutoff score has been a useful management tool, EPA proposed that the cutoff score for the revised HRS be functionally equivalent to the original cutoff. However, EPA wanted to evaluate the practical effects of keeping the cutoff score at 28.50 -- that is, will that score continue to provide an appropriate set of priorities for management purposes. EPA examined several approaches for defining "equivalent to 28.50". These approaches included:

- A statistical analysis to determine what revised HRS score best corresponds to 28.50 on the original HRS.
- A determination of the percentage of potential sites in CERCLIS (EPA's inventory of potential hazardous waste sites) that score above 28-50 on the original NPL and the setting of a cutoff that yields the same percentage.
- An identification of risk levels that on the average correspond to an original HRS score of 28.50 and a determination of what revised HRS score best corresponds to that risk level.

Based on an analysis of 110 test sites, scored with both the original and revised HRS, EPA has decided not to change the cutoff score at this time because the analysis did not point to a single number as the appropriate cutoff. The field test data show that few sites score in the range of 25 to 30 with the revised HRS. EPA believes that this range may represent a true breakpoint in the distribution of site scores and that the sites scoring above the range of 25-30 are clearly the types of sites that should be captured with a screening tool.

Because the HRS is intended to be a screening tool, EPA has never attached significance to the cutoff score as an indicator of a specific level of risk froma site, nor has EPA intended to imply that "risky" and "nonrisky" sites can be precisely distinguished. Nevertheless, the cutoff score has been a successful screening tool that has allowed EPA to set priorities and to move forward with studying and, where appropriate, to clean up hazardous waste sites. The vast majority of sites scoring above 28.50 in the past have been shown to present risks.

Scoring on the Basis of Current Conditions. Under the original HRS, EPA generally scored the three migration pathways based on the conditions at the site before, any response action had been taken, rather than based on current conditions at the site. In revising the HRS, EPA decided that it may be appropriate to evaluate sites based on current conditions and to consider prior responses in calculating an HRS score.

The policy of evaluating sites based on current conditions raised concerns that it might:

- Encourage private parties to only take action sufficient to lower the score so the site would not be placed on the NPL
- Discourage public agencies from taking early actions that could lower the score, thus preventing the site from being on the NPL and therefore eligible for Superfund monies.

EPA examined two approaches to incorporate current site conditions in the HRS score. Under either approach, EPA would only consider actions prior to a site inspection, which provides most of the data used to score a site. Because response action at sites may be an ongoing process, it would be burden-some to recalculate scores continually to reflect such actions. The two approaches were:

- Consideration of current conditions for certain pathways or factors where appropriate.
- Consideration of current conditions routinely, but identification of situations where initial conditions more accurately reflect risks.

EPA decided to consider response actions prior to a site inspection because it will provide increased incentives for rapid response.

REFERENCE 2

SUPERFUND CHEMICAL DATA MATRIX METHODOLOGY

Prepared For EPA
January 2004

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Substance Name	CAS Number	MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Fresh	Salt	Fresh	Salt
Acenaphthene	000083-32-9	...	2.2E+0	...	...	8.1E+1	...	...	...	...	...
Acenaphthylene	000208-96-8	...	...	...	...	...	...	...	...	...	...
Acetone	000067-64-1	...	3.3E+1*	...	...	1.2E+3*	...	...	...	...	...
Acrolein	000107-02-8	...	1.8E-2*	...	...	6.8E-1*	...	...	...	...	...
Acrylamide	000079-06-1	...	7.3E-3	1.9E-5	...	2.7E-1	7.0E-4	...	...	...	...
Alachlor**	015972-60-8	2.0E-3	3.6E-1	1.1E-3	...	1.4E+1	3.9E-2	...	...	...	...
Aldrin	000309-00-2	...	1.1E-3	5.0E-6	3.0E-1	4.1E-2	1.9E-4	3.0E+0[G]	1.3E+0[G]	...	...
Aluminum	007429-90-5	...	...	...	...	...	...	7.5E+2[G2, I2]	...	8.7E+1[G2, I2, L2]	...
Americium**	007440-35-9	...	...	...	...	...	...	...	...	...	...
Aniline	000062-53-3	...	...	1.5E-2	...	...	5.5E-1	...	...	...	...
Anthracene	000120-12-7	...	1.1E+1	...	...	4.1E+2	...	...	...	...	...
Antimony	007440-36-0	6.0E-3	1.5E-2	...	...	5.4E-1	...	...	...	...	...
Arsenic	007440-38-2	1.0E-2*	1.1E-2	5.7E-5	...	4.1E-1	2.1E-3	3.4E+2[A, D, K]	6.9E+1[A, D, bb]	1.5E+2[A, D, K]	3.6E+1[A, D, bb]
Asbestos	001332-21-4	7.0E+0 million fibers/L	...	...	...	...	...	...	...	...	...

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

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		Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
								Acute CMC (µg/L) *		Chronic CCC (µg/L) *	
Substance Name	CAS Number	MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Fresh	Salt	Fresh	Salt
Barium	007440-39-3	2.0E+0	2.6E+0	...	...	9.5E+1	...	...	...	...	...
Benz(a)anthracene	000056-55-3	...	...	1.2E-4	...	...	4.3E-3	...	...	...	...
Benzene	000071-43-2	5.0E-3	1.5E-1*	1.5E-3	...	5.4E+0*	5.7E-2*	...	...	...	...
Benzidine	000092-87-5	...	1.1E-1	3.7E-7	...	4.1E+0	1.4E-5	...	...	...	...
Benzo(a)pyrene	000050-32-8	2.0E-4	...	1.2E-5	...	...	4.3E-4	...	...	...	...
Benzo(g,h,i)perylene	000191-24-2	...	...	...	...	...	...	...	...	...	...
Benzo(j,k)fluorene (Fluoranthene)	000206-44-0	...	1.5E+0	...	...	5.4E+1	...	...	...	...	...
Benzo(k)fluoranthene	000207-08-9	...	...	1.2E-3	...	...	4.3E-2	...	...	...	...
Beryllium	007440-41-7	4.0E-3	7.3E-2*	...*	...	2.7E+0*	...*	...	...	...	...
Bis (2-ethylhexyl) phthalate	000117-81-7	6.0E-3	7.3E-1	6.1E-3	...	2.7E+1	2.3E-1	...	...	...	...
Boron	007440-42-8	...	3.3E+0	...	...	1.2E+2	...	...	...	...	...
Bromodichloromethane	000075-27-4	...*	7.3E-1	1.4E-3	...	2.7E+1	5.1E-2	...	...	...	...
Butylbenzyl phthalate	000085-68-7	...	7.3E+0	...	...	2.7E+2	...	...	...	...	...
Cadmium	007440-43-9	5.0E-3	1.8E-2	...	...	6.8E-1	...	2.0E+0[D, E, K, bb]	4.0E+1[D, bb]	2.5E-1[D, E, K, bb]	8.8E+0[D, bb]

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** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) *		Chronic CCC (µg/L) *	
								Fresh	Salt	Fresh	Salt
Carbazole	000086-74-8	...	...	4.3E-3	...	...	1.6E-1	...	...	...	...
Carbon disulfide	000075-15-0	...	3.7E+0	...	...	1.4E+2	...	...	...	...	...
Carbon tetrachloride	000056-23-5	5.0E-3	2.6E-2	6.6E-4	...	9.5E-1	2.4E-2	...	...	...	...
Cesium	007440-46-2	...	...	...	...	...	...	...	...	...	...
Chlordane	000057-74-9	2.0E-3	1.8E-2	2.4E-4	3.0E-1	6.8E-1*	9.0E-3	2.4E+0[G]	9.0E-2[G]	4.3E-3[G, aa]	4.0E-3[G, aa]
Chlordane, alpha-	005103-71-9	...	1.8E-2*	2.4E-4*	...	6.8E-1*	9.0E-3*	...	...	...	...
Chlordane, gama-	005566-34-7	...	1.8E-2*	2.4E-4*	...	6.8E-1*	9.0E-3*	...	...	...	...
Chlorobenzene	000108-90-7	1.0E-1	7.3E-1	...	...	2.7E+1	...	...	...	...	...
Chloroform	000067-66-3	...*	3.6E-1	...*	...	1.4E+1	...*	...	...	...	...
Chromium	007440-47-3	1.0E-1	1.1E-1*	...	...	4.1E+0*	...	...	...	...	...
Chromium(III)	016065-83-1	...	5.5E+1*	...	...	2.0E+3*	...	5.7E+2[D, E, K]	...	7.4E+1[D, E, K]	...
Chromium(VI)	018540-29-9	...	1.1E-1*	...	...	4.1E+0*	...	1.6E+1[D, K]	1.1E+3[D, bb]	1.1E+1[D, K]	5.0E+1[D, bb]
Chrysene	000218-01-9	...	...	1.2E-2	...	...	4.3E-1	...	...	...	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (μg/L) *		Chronic CCC (μg/L) *	
								Fresh	Salt	Fresh	Salt
Cobalt	007440-48-4	...	...	...	...	...	...	...	...	...	...
Copper	007440-50-8	1.3E+0	...	...	...	...	...	1.3E+1[D, E, K, cc]	4.8E+0[D, cc, ff]	9.0E+0[D, E, K, cc]	3.1E+0[D, cc, ff]
Cumene	000098-82-8	...	3.7E+0*	...	...	1.4E+2*	...	...	...	...	...
Cyanamide**	000420-04-2	...	...	...	...	...	...	...	...	...	...
Cyanide	000057-12-5	2.0E-1	7.3E-1	...	...	2.7E+1	...	2.2E+1[K, Q]	1.0E+0[Q, bb]	5.2E+0[K, Q]	1.0E+0[Q, bb]
DDD	000072-54-8	...	...	3.5E-4	...*	...	1.3E-2	...	...	...	...
DDE	000072-55-9	...	...	2.5E-4	5.0E+0	...	9.3E-3	...	...	...	...
DDT	000050-29-3	...	1.8E-2	2.5E-4	5.0E+0	6.8E-1	9.3E-3	1.1E+0[G, ii]	1.3E-1[G, ii]	1.0E-3[G, aa, ii]	1.0E-3[G, aa, ii]
Di-n-butyl phthalate	000084-74-2	...	3.7E+0	...	...	1.4E+2	...	...	...	...	...
Di-n-octyl phthalate	000117-84-0	...	7.3E-1	...	...	2.7E+1	...	...	...	...	...
Dibenz(a,h)anthracene	000053-70-3	...	...	1.2E-5	...	...	4.3E-4	...	...	...	...
Dibenzofuran	000132-64-9	...	1.5E-1*	...	...	5.4E+0*	...	...	...	...	...
Dibromo-3-chloropropane, 1,2-	000096-12-8	2.0E-4	...	6.1E-5	...	...	2.3E-3	...	...	...	...
Dibromoethane, 1,2-	000106-93-4	...*	...	1.0E-6	...	...	3.7E-5	...	...	...	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) *		Chronic CCC (µg/L) *	
								Fresh	Salt	Fresh	Salt
Dichlorobenzene, 1,4-	000106-46-7	7.5E-2	...	3.5E-3	...	...	1.3E-1	...	...	...	...
Dichloroethane, 1,1-	000075-34-3	...	3.7E+0	...	...	1.4E+2	...	...	...	...	...
Dichloroethane, 1,2-	000107-06-2	5.0E-3	...	9.4E-4	...	...	3.5E-2	...	...	...	...
Dichloroethylene, 1,1-	000075-35-4	7.0E-3	1.8E+0*	...*	...	6.8E+1*	...*	...	...	...	...
Dichloroethylene, 1,2-**	000540-59-0	...	3.3E-1	...	...	1.2E+1	...	...	...	...	...
Dichloroethylene, cis-1,2-	000156-59-2	7.0E-2	3.6E-1	...	...	1.4E+1	...	...	...	...	...
Dichloroethylene, trans-1,2-	000156-60-5	1.0E-1	7.3E-1	...	...	2.7E+1	...	...	...	...	...
Dichlorophenol, 2,4-	000120-83-2	...	1.1E-1	...	...	4.1E+0	...	...	...	...	...
Dichloropropane, 1,2-	000078-87-5	5.0E-3	...	1.3E-3	...	...	4.6E-2	...	...	...	...
Dichloropropene, 1,3-	000542-75-6	...	1.1E+0*	8.5E-4	...	4.1E+1*	3.2E-2	...	...	...	...
Dieldrin	000060-57-1	...	1.8E-3	5.3E-6	3.0E-1	6.8E-2	2.0E-4	2.4E-1[K]	7.1E-1[G]	5.6E-2[K, O]	1.9E-3[G, aa]
Diethyl phthalate	000084-66-2	...	2.9E+1	...	...	1.1E+3	...	...	...	...	...
Dimethyl phenol, 2,4-	000105-67-9	...	7.3E-1	...	...	2.7E+1	...	...	...	...	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

		Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
								Acute CMC (µg/L) *		Chronic CCC (µg/L) *	
Substance Name	CAS Number	MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Fresh	Salt	Fresh	Salt
Dinitrobenzene, 1,3-	000099-65-0	...	3.7E-3	...	...	1.4E-1	...	...	...	...	...
Dioxin 1,4-**	000290-67-5	...	...	...	...	...	...	...	...	...	...
Diphenylhydrazine, 1,2-	000122-66-7	...	...	1.1E-4	...	...	3.9E-3	...	...	...	...
Disulfoton	000298-04-4	...	1.5E-3	...	...	5.4E-2	...	...	...	...	...
Endosulfan (I or II)	000115-29-7	...	2.2E-1	...	...	8.1E+0	...	...	...	...	...
Endosulfan I**	000959-98-8	...	2.2E-1	...	...	8.1E+0	...	2.2E-1[G, Y]	3.4E-2[G, Y]	5.6E-2[G, Y]	8.7E-3[G, Y]
Endosulfan II**	033213-65-9	...	2.2E-1	...	...	8.1E+0	...	2.2E-1[G, Y]	3.4E-2[G, Y]	5.6E-2[G, Y]	8.7E-3[G, Y]
Endrin	000072-20-8	2.0E-3	1.1E-2	...	...	4.1E-1	...	8.6E-2[K]	3.7E-2[G]	3.6E-2[K, O]	2.3E-3[G, aa]
Endrin aldehyde	007421-93-4	...	...	...	...	...	...	...	...	...	...
Ethyl benzene	000100-41-4	7.0E-1	3.7E+0	...	...	1.4E+2	...	...	...	...	...
Ethyl chloride	000075-00-3	...	...	...	...	...	...	...	...	...	...
Ethylene glycol monobutyl ether (EBGE)**	000111-76-2	...	1.8E+1	...	...	6.8E+2	...	...	...	...	...
Fluorene	000086-73-7	...	1.5E+0	...	...	5.4E+1	...	...	...	...	...
Fluorine	007782-41-4	...	2.2E+0	...	...	8.1E+1	...	...	...	...	...

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water: MCL/MCLG (mg/L)	Ground Water/Surface Water Pathway Drinking Water: Reference Dose Screen Conc (mg/L)	Ground Water/Surface Water Pathway Drinking Water: Cancer Risk Screen Conc (mg/L)	Surface Water Pathway Food Chain: FDAAL (ppm)	Surface Water Pathway Food Chain: Ref. Dose Screen Conc (mg/kg)	Surface Water Pathway Food Chain: Cancer Risk Screen Conc (mg/kg)	Surface Water Pathway Environmental: Acute CMC (µg/L) * Fresh	Surface Water Pathway Environmental: Acute CMC (µg/L) * Salt	Surface Water Pathway Environmental: Chronic CCC (µg/L) * Fresh	Surface Water Pathway Environmental: Chronic CCC (µg/L) * Salt
Heptachlor	000076-44-8	4.0E-4	1.8E-2	1.9E-5	3.0E-1	6.8E-1	7.0E-4	5.2E-1[G]	5.3E-2[G]	3.8E-3[G, aa]	3.6E-3[G, aa]
Heptachlor epoxide, alpha, beta, gamma	001024-57-3	2.0E-4	4.7E-4	9.4E-6	3.0E-1	1.8E-2	3.5E-4	5.2E-1[G, V]	5.3E-2[G, V]	3.8E-3[G, V, aa]	3.6E-3[G, V, aa]
Heptachlorodibenzo-p-dioxin**	037871-00-4	...	...	...	...	...	...	...	...	...	...
Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-	035822-46-9	...	...	5.7E-7	...	...	2.1E-5	...	...	...	...
Heptachlorodibenzofuran 1,2,3,4,6,7,8-	067562-39-4	...	...	5.7E-7	...	...	2.1E-5	...	...	...	...
Heptachlorodibenzofuran 1,2,3,4,7,8,9-	055673-89-7	...	...	5.7E-7*	...	...	2.1E-5*	...	...	...	...
Hexabromobiphenyl (PBB)**	036355-01-8	...	...	...	...	...	...	...	...	...	...
Hexachlorobenzene	000118-74-1	1.0E-3	2.9E-2	5.3E-5	...	1.1E+0	2.0E-3	...	...	...	...
Hexachlorobutadiene	000087-68-3	...	7.3E-3	1.1E-3	...	2.7E-1	4.0E-2	...	...	...	...
Hexachlorocyclohexane, alpha-	000319-84-6	...	...	1.4E-5	...	...	5.0E-4	...	...	...	...
Hexachlorocyclohexane, beta-	000319-85-7	...	...	4.7E-5	...	...	1.8E-3	...	...	...	...
Hexachlorodibenzo-p-dioxin 1,2,3,4,7,8-	039227-28-6	...	...	1.4E-8	...	...	5.3E-7	...	...	...	...
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-	057653-85-7	...	...	1.4E-8	...	...	5.3E-7	...	...	...	...
Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-	019408-74-3	...	...	1.4E-8	...	...	5.1E-7	...	...	...	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

HAZARD RANKING SYSTEM

Hazardous Substance Benchmarks

		Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
								Acute CMC (µg/L) *		Chronic CCC (µg/L) *	
Substance Name	CAS Number	MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Fresh	Salt	Fresh	Salt
Hexachlorodibenzofuran 1,2,3,4,7,8-	070648-26-9	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...
Hexachlorodibenzofuran 1,2,3,6,7,8-	057117-44-9	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...
Hexachlorodibenzofuran 1,2,3,7,8,9-	072918-21-9	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...
Hexachlorodibenzofuran 2,3,4,6,7,8-	060851-34-5	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...
Hydrazine	000302-01-2	...	...	2.8E-5	...	...	1.1E-3	...	...	...	...
Hydrogen sulfide	007783-06-4	...	1.1E+0*	...	...	4.1E+1*	...	...	...	2.0E+0[F2]	2.0E+0[F2]
Indeno(1,2,3-cd)pyrene	000193-39-5	...	...	1.2E-4	...	...	4.3E-3	...	...	...	...
Iron	007439-89-6	...	...	...	...	...	...	...	...	1.0E+3[F2]	...
Lead	007439-92-1	1.5E-2	...	...	...	...	...	6.5E+1[D, E, bb, gg]	2.1E+2[D, bb]	2.5E+0[D, E, bb, gg]	8.1E+0[D, bb]
Lead chromate**	007758-97-6	...	...	...	...	...	...	...	...	...	...
Lindane	000058-89-9	2.0E-4	1.1E-2	6.6E-5	...	4.1E-1	2.4E-3	9.5E-1[K]	1.6E-1[G]	...	...
Manganese	007439-96-5	...	5.1E+0	...	...	1.9E+2	...	...	...	...	...
Mercury	007439-97-6	2.0E-3	1.1E-2	...	1.0E+0	4.1E-1	...	1.4E+0[D, K, hh]	1.8E+0[D, ee, hh]	7.7E-1[D, K, hh]	9.4E-1[D, ee, hh]

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** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) *		Chronic CCC (µg/L) *	
								Fresh	Salt	Fresh	Salt
Methoxychlor	000072-43-5	4.0E-2	1.8E-1	...	...	6.8E+0	...	...	...	3.0E-2[F2]	3.0E-2[F2]
Methyl Parathion	000298-00-0	...	9.1E-3	...	...	3.4E-1	...	...	...	...	...
Methyl ethyl ketone	000078-93-3	...	2.2E+1	...	...	8.1E+2	...	...	...	...	...
Methyl isobutyl ketone	000108-10-1	...	2.9E+0	...	...	1.1E+2	...	...	...	...	...
Methyl phenol, 4-	000106-44-5	...	1.8E-1	...	...	6.8E+0	...	...	...	...	...
Methyl tert-butyl ether (MTBE)**	001634-04-4	...	...	...	...	...	...	...	...	...	...
Methylene chloride (dichloromethane)	000075-09-2	5.0E-3	2.2E+0	1.1E-2	...	8.1E+1	4.2E-1	...	...	...	...
Methylnaphthalene, 2-	000091-57-6	...	...	...	...	...	...	...	...	...	...
Naphthalene	000091-20-3	...	1.5E+0	...	...	5.4E+1	...	...	...	...	...
Nickel	007440-02-0	...	7.3E-1	...	...	2.7E+1	...	4.7E+2[D, E, K]	7.4E+1[D, bb]	5.2E+1[D, E, K]	8.2E+0[D, bb]
Nitrosodiphenylamine, N-	000086-30-6	...	...	1.7E-2	...	...	6.4E-1	...	...	...	...
Pentachlorodibenzo-p-dioxin 1,2,3,7,8-	040321-76-4	...	...	1.1E-9	...	...	4.2E-8	...	...	...	...
Pentachlorodibenzofuran 1,2,3,7,8-	057117-41-6	...	...	...*	...	...	...*	...	...	...	...
Pentachlorodibenzofuran 2,3,4,7,8-**	057117-31-4	...	...	5.7E-9	...	...	2.1E-7	...	...	...	...

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Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) * Fresh	Acute CMC (µg/L) * Salt	Chronic CCC (µg/L) * Fresh	Chronic CCC (µg/L) * Salt
Pentachlorophenol (PCP)	000087-86-5	1.0E-3	1.1E+0	7.1E-4	...	4.1E+1	2.6E-2	1.9E+1[F, K]	1.3E+1[bb]	1.5E+1[F, K]	7.9E+0[bb]
Perchlorate**	014797-73-0	...	3.7E-3	...	...	1.4E-1	...	...	...	...	...
Phenanthrene	000085-01-8	...	...	...	...	...	...	...	...	...	...
Phenol	000108-95-2	...	1.1E+1*	...	...	4.1E+2*	...	...	...	...	...
Plutonium	007440-07-5	...	...	...	...	...	...	...	...	...	...
Polychlorinated biphenyls (PCBs)	001336-36-3	5.0E-4	7.3E-4	4.3E-5	...	2.7E-2	1.6E-3	...	...	1.4E-2[N, aa]	3.0E-2[N, aa]
Pyrene	000129-00-0	...	1.1E+0	...	...	4.1E+1	...	...	...	...	...
Radium	007440-14-4	...	...	...	...	...	...	...	...	...	...
Radon	010043-92-2	...	...	...	...	...	...	...	...	...	...
Selenium	007782-49-2	5.0E-2	1.8E-1	...	...	6.8E+0	...	...[L, R, T]	2.9E+2[D, bb, dd]	5.0E+0[T]	7.1E+1[D, bb, dd]
Silver	007440-22-4	...	1.8E-1	...	...	6.8E+0	...	3.2E+0[D, E, G]	1.9E+0[D, G]	...	...
Strontium	007440-24-6	...	...	...	...	...	...	...	...	...	...
Styrene	000100-42-5	1.0E-1	7.3E+0	...	...	2.7E+2	...	...	...	...	...

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water: MCL/MCLG (mg/L)	Ground Water/Surface Water Pathway Drinking Water: Reference Dose Screen Conc (mg/L)	Ground Water/Surface Water Pathway Drinking Water: Cancer Risk Screen Conc (mg/L)	Surface Water Pathway Food Chain: FDAAL (ppm)	Surface Water Pathway Food Chain: Ref. Dose Screen Conc (mg/kg)	Surface Water Pathway Food Chain: Cancer Risk Screen Conc (mg/kg)	Surface Water Pathway Environmental: Acute CMC (µg/L) * Fresh	Surface Water Pathway Environmental: Acute CMC (µg/L) * Salt	Surface Water Pathway Environmental: Chronic CCC (µg/L) * Fresh	Surface Water Pathway Environmental: Chronic CCC (µg/L) * Salt
Tetrachlorobenzene, 1,2,4,5-	000095-94-3	...	1.1E-2	...	...	4.1E-1	...	...	...	...	...
Tetrachlorodibenzo-p-dioxin**	041903-57-5	...	...	...	...	...	...	...	...	...	...
Tetrachlorodibenzo-p-dioxin 2,3,7,8- (TCDD)	001746-01-6	3.0E-8	...	5.7E-10	...	...	2.1E-8	...	...	...	...
Tetrachlorodibenzofuran 2,3,7,8-	051207-31-9	...	...	5.7E-9	...	...	2.1E-7	...	...	...	...
Tetrachloroethane, 1,1,2,2-	000079-34-5	...	...	4.3E-4	...	...	1.6E-2	...	...	...	...
Tetrachloroethylene	000127-18-4	5.0E-3	3.6E-1	1.6E-3	...	1.4E+1	6.1E-2	...	...	...	...
Thallium	007440-28-0	5.0E-4	...	...	...	...	...	...	...	...	...
Toluene	000108-88-3	1.0E+0	7.3E+0	...	...	2.7E+2	...	...	...	...	...
Toxaphene	008001-35-2	3.0E-3	...	7.7E-5	...	...	2.9E-3	7.3E-1	2.1E-1	2.0E-4[aa]	2.0E-4[aa]
Trichlorobenzene, 1,2,4-	000120-82-1	7.0E-2	3.6E-1	...	...	1.4E+1	...	...	...	...	...
Trichloroethane, 1,1,1-	000071-55-6	2.0E-1	...	...	...	...	...	...	...	...	...
Trichloroethane, 1,1,2-	000079-00-5	3.0E-3	1.5E-1	1.5E-3	...	5.4E+0	5.5E-2	...	...	...	...
Trichloroethylene (TCE)	000079-01-6	5.0E-3	...	7.7E-3	...	...	2.9E-1	...	...	...	...
Trichlorofluoromethane	000075-69-4	...	1.1E+1	...	...	4.1E+2	...	...	...	...	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

		Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
								Acute CMC (µg/L) *		Chronic CCC (µg/L) *	
Substance Name	CAS Number	MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Fresh	Salt	Fresh	Salt
Trichlorophenol, 2,4,6-	000088-06-2	...	...	7.7E-3	...	...	2.9E-1	...	...	...	...
Trichloropropane, 1,2,3-	000096-18-4	...	2.2E-1	1.2E-5	...	8.1E+0	4.5E-4	...	...	...	...
Trifluralin (Treflan)	001582-09-8	...	2.7E-1	1.1E-2	...	1.0E+1	4.1E-1	...	...	...	...
Trinitrobenzene, 1,3,5-	000099-35-4	...	1.1E+0*	...	...	4.1E+1*	...	...	...	...	...
Vanadium	007440-62-2	...	2.6E-1	...	...	9.5E+0	...	...	...	...	...
Vinyl acetate	000108-05-4	...	3.7E+1	...	...	1.4E+3	...	...	...	...	...
Vinyl chloride	000075-01-4	2.0E-3	1.1E-1*	5.7E-5	...	4.1E+0*	2.1E-3	...	...	...	...
Xylene**	001330-20-7	...	7.3E+0	...	...	2.7E+2	...	...	...	...	...
Xylene, m-	000108-38-3	1.0E+1	7.3E+1	...	...	2.7E+3	...	...	...	...	...
Xylene, o-	000095-47-6	1.0E+1	7.3E+1	...	...	2.7E+3	...	...	...	...	...
Xylene, p-	000106-42-3	1.0E+1	...	...	...	...	...	...	...	...	...
Zinc	007440-66-6	...	1.1E+1	...	...	4.1E+2	...	1.2E+2 [D, E, K]	9.0E+1 [D, bb]	1.2E+2 [D, E, K]	8.1E+1 [D, bb]

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Acenaphthene	000083-32-9	...	...	...	4.7E+3	...
Acenaphthylene	000208-96-8	...	...	...	...	...
Acetone	000067-64-1	...	...	...	7.0E+4*	...
Acrolein	000107-02-8	...	2.1E-5	...	3.9E+1*	...
Acrylamide	000079-06-1	...	...	1.9E-6	1.6E+1	1.4E-1
Alachlor**	015972-60-8	...	...	...	7.8E+2	8.0E+0
Aldrin	000309-00-2	...	...	5.0E-7	2.3E+0	3.8E-2
Aluminum	007429-90-5	...	...	...	...	...
Americium**	007440-35-9	...	...	...	...	...
Aniline	000062-53-3	...	1.0E-3	...	...	1.1E+2*
Anthracene	000120-12-7	...	...	...	2.3E+4*	...
Antimony	007440-36-0	...	4.2E-4*	...	3.1E+1	...
Arsenic	007440-38-2	...	...	5.7E-7	2.3E+1	4.3E-1
Asbestos	001332-21-4	...	...	Inhal Unit Risk: 2.3E-1 fibers/mL*	...	...

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Barium	007440-39-3	...	5.2E-4	...	5.5E+3	...
Benz(a)anthracene	000056-55-3	...	...	...	...	8.8E-1
Benzene	000071-43-2	...	3.1E-2*	3.1E-4	3.1E+2*	1.2E+1*
Benzidine	000092-87-5	...	...	3.6E-8	2.3E+2	2.8E-3
Benzo(a)pyrene	000050-32-8	...	...	...	...	8.8E-2
Benzo(g,h,i)perylene	000191-24-2	...	...	...	...	...
Benzo(j,k)fluorene (Fluoranthene)	000206-44-0	...	...	...	3.1E+3	...
Benzo(k)fluoranthene	000207-08-9	...	...	...	...	8.8E+0
Beryllium	007440-41-7	1.0E-2	2.1E+1*	1.0E-6	1.6E+2*	...*
Bis (2-ethylhexyl) phthalate	000117-81-7	...	...	...	1.6E+3	4.6E+1*
Boron	007440-42-8	...	2.1E-2	...	7.0E+3	...
Bromodichloromethane	000075-27-4	...	...	...	1.6E+3	1.0E+1
Butylbenzyl phthalate	000085-68-7	...	...	...	1.6E+4*	...
Cadmium	007440-43-9	...	9.4E-4*	1.4E-6	3.9E+1	...

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

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Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Carbazole	000086-74-8	...	...	...	...	3.2E+1*
Carbon disulfide	000075-15-0	...	7.3E-1	...	7.8E+3	...
Carbon tetrachloride	000056-23-5	...	2.1E-2*	1.6E-4	5.5E+1	4.9E+0
Cesium	007440-46-2	...	...	...	...	...
Chlordane	000057-74-9	...	7.3E-4*	2.4E-5	3.9E+1*	1.8E+0*
Chlordane, alpha-	005103-71-9	...	7.3E-4*	2.4E-5*	3.9E+1*	1.8E+0*
Chlordane, gama-	005566-34-7	...	7.3E-4*	2.4E-5*	3.9E+1*	1.8E+0*
Chlorobenzene	000108-90-7	...	2.1E-2	...	1.6E+3	...
Chloroform	000067-66-3	...	...	1.1E-4	7.8E+2	...*
Chromium	007440-47-3	...	8.3E-6*	...*	2.3E+2*	...
Chromium(III)	016065-83-1	...	...	...	1.2E+5*	...
Chromium(VI)	018540-29-9	...	8.3E-6*	2.0E-7	2.3E+2*	...
Chrysene	000218-01-9	...	...	...	...	8.8E+1*
Cobalt	007440-48-4	...	...	...	...	...
Copper	007440-50-8	...	...	...	...	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

		AIR PATHWAY			SOIL PATHWAY	
Substance Name	CAS Number	NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Cumene	000098-82-8	...	4.2E-1*	...	7.8E+3*	...
Cyanamide**	000420-04-2	...	...	...	...	...
Cyanide	000057-12-5	...	...	...	1.6E+3	...
DDD	000072-54-8	...	...	...	...	2.7E+0
DDE	000072-55-9	...	...	...	...	1.9E+0
DDT	000050-29-3	...	...	2.5E-5	3.9E+1	1.9E+0
Di-n-butyl phthalate	000084-74-2	...	...	...	7.8E+3	...
Di-n-octyl phthalate	000117-84-0	...	...	...	1.6E+3	...
Dibenz(a,h)anthracene	000053-70-3	...	...	...	...	8.8E-2
Dibenzofuran	000132-64-9	...	...	...	3.1E+2*	...
Dibromo-3-chloropropane, 1,2-	000096-12-8	...	2.1E-4	3.5E-3	...	4.6E-1
Dibromoethane, 1,2-	000106-93-4	...	2.1E-4	1.1E-5	...	7.5E-3
Dichlorobenzene, 1,4-	000106-46-7	...	8.3E-1	...	...	2.7E+1*
Dichloroethane, 1,1-	000075-34-3	...	5.2E-1*	...	7.8E+3	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

		AIR PATHWAY			SOIL PATHWAY	
Substance Name	CAS Number	NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Dichloroethane, 1,2-	000107-06-2	...	...	9.4E-5	...	7.0E+0
Dichloroethylene, 1,1-	000075-35-4	...	2.1E-1*	7.1E-6	3.9E+3*	...*
Dichloroethylene, 1,2-**	000540-59-0	...	...	...	7.0E+2	...
Dichloroethylene, cis-1,2-	000156-59-2	...	...	...	7.8E+2	...
Dichloroethylene, trans-1,2-	000156-60-5	...	...	...	1.6E+3	...
Dichlorophenol, 2,4-	000120-83-2	...	...	...	2.3E+2	...
Dichloropropane, 1,2-	000078-87-5	...	4.2E-3	...	...	9.4E+0
Dichloropropene, 1,3-	000542-75-6	...	2.1E-2	6.1E-4	2.3E+3*	6.4E+0*
Dieldrin	000060-57-1	...	...	5.3E-7	3.9E+0	4.0E-2
Diethyl phthalate	000084-66-2	...	...	...	6.3E+4*	...
Dimethyl phenol, 2,4-	000105-67-9	...	...	...	1.6E+3	...
Dinitrobenzene, 1,3-	000099-65-0	...	...	...	7.8E+0	...
Dioxin 1,4-**	000290-67-5	...	...	...	...	...
Diphenylhydrazine, 1,2-	000122-66-7	...	...	1.1E-5	...	8.0E-1
Disulfoton	000298-04-4	...	...	...	3.1E+0	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

		AIR PATHWAY			SOIL PATHWAY	
Substance Name	CAS Number	NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Endosulfan (I or II)	000115-29-7	...	...	...	4.7E+2	...
Endosulfan I**	000959-98-8	...	...	...	4.7E+2	...
Endosulfan II**	033213-65-9	...	...	...	4.7E+2	...
Endrin	000072-20-8	...	...	...	2.3E+1	...
Endrin aldehyde	007421-93-4	...	...	...	...	...
Ethyl benzene	000100-41-4	...	1.0E+0	...	7.8E+3	...
Ethyl chloride	000075-00-3	...	1.0E+1	...	...	...
Ethylene glycol monobutyl ether (EBGE)**	000111-76-2	...	2.1E-1	...	3.9E+4	...
Fluorene	000086-73-7	...	...	...	3.1E+3	...
Fluorine	007782-41-4	...	...	...	4.7E+3	...
Heptachlor	000076-44-8	...	...	1.9E-6	3.9E+1	1.4E-1
Heptachlor epoxide, alpha, beta, gamma	001024-57-3	...	...	9.4E-7	1.0E+0	7.0E-2
Heptachlorodibenzo-p-dioxin**	037871-00-4	...	...	...	...	...
Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-	035822-46-9	...	...	5.7E-8	...	4.3E-3

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Heptachlorodibenzofuran 1,2,3,4,6,7,8-	067562-39-4	...	...	5.7E-8	...	4.3E-3
Heptachlorodibenzofuran 1,2,3,4,7,8,9-	055673-89-7	...	...	5.7E-8*	...	4.3E-3*
Hexabromobiphenyl (PBB)**	036355-01-8	...	...	...	...	...
Hexachlorobenzene	000118-74-1	...	...	5.3E-6	6.3E+1	4.0E-1
Hexachlorobutadiene	000087-68-3	...	...	1.1E-4	1.6E+1	8.2E+0
Hexachlorocyclohexane, alpha-	000319-84-6	...	...	1.4E-6	...	1.0E-1
Hexachlorocyclohexane, beta-	000319-85-7	...	...	4.6E-6	...	3.5E-1
Hexachlorodibenzo-p-dioxin 1,2,3,4,7,8-	039227-28-6	...	...	1.4E-9	...	1.1E-4
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-	057653-85-7	...	...	1.4E-9	...	1.1E-4
Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-	019408-74-3	...	...	1.9E-9	...	1.0E-4
Hexachlorodibenzofuran 1,2,3,4,7,8-	070648-26-9	...	...	5.7E-9	...	4.3E-4
Hexachlorodibenzofuran 1,2,3,6,7,8-	057117-44-9	...	...	5.7E-9	...	4.3E-4
Hexachlorodibenzofuran 1,2,3,7,8,9-	072918-21-9	...	...	5.7E-9	...	4.3E-4
Hexachlorodibenzofuran 2,3,4,6,7,8-	060851-34-5	...	...	5.7E-9	...	4.3E-4

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

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		AIR PATHWAY			SOIL PATHWAY	
Substance Name	CAS Number	NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Hydrazine	000302-01-2	...	...	5.0E-7	...	2.1E-1
Hydrogen sulfide	007783-06-4	...	2.1E-3	...	2.3E+3*	...
Indeno(1,2,3-cd)pyrene	000193-39-5	...	...	...	...	8.8E-1
Iron	007439-89-6	...	...	...	...	...
Lead	007439-92-1	1.5E+0	...	...	...	...
Lead chromate**	007758-97-6	...	...	...	...	...
Lindane	000058-89-9	...	...	...	2.3E+1	4.9E-1
Manganese	007439-96-5	...	5.2E-5	...	1.1E+4	...
Mercury	007439-97-6	...	3.1E-4	...	2.3E+1	...
Methoxychlor	000072-43-5	...	...	...	3.9E+2	...
Methyl Parathion	000298-00-0	...	...	...	2.0E+1	...
Methyl ethyl ketone	000078-93-3	...	5.2E+0*	...	4.7E+4*	...
Methyl isobutyl ketone	000108-10-1	...	3.1E+0*	...	6.3E+3	...
Methyl phenol, 4-	000106-44-5	...	...	...	3.9E+2	...
Methyl tert-butyl ether (MTBE)**	001634-04-4	...	3.1E+0	...	...	...

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

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Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Methylene chloride (dichloromethane)	000075-09-2	...	3.1E+0	5.2E-3	4.7E+3	8.5E+1*
Methylnaphthalene, 2-	000091-57-6	...	...	...	...	...
Naphthalene	000091-20-3	...	3.1E-3*	...	3.1E+3	...
Nickel	007440-02-0	...	...	...	1.6E+3	...
Nitrosodiphenylamine, N-	000086-30-6	...	...	...	...	1.3E+2*
Pentachlorodibenzo-p-dioxin 1,2,3,7,8-	040321-76-4	...	...	1.1E-10	...	8.5E-6
Pentachlorodibenzofuran 1,2,3,7,8-	057117-41-6	...	...	...*	...	...*
Pentachlorodibenzofuran 2,3,4,7,8-**	057117-31-4	...	...	5.7E-10	...	4.3E-5
Pentachlorophenol (PCP)	000087-86-5	...	...	...	2.3E+3	5.3E+0
Perchlorate**	014797-73-0	...	...	...	7.8E+0	...
Phenanthrene	000085-01-8	...	...	...	...	...
Phenol	000108-95-2	...	...	...	2.3E+4*	...
Plutonium	007440-07-5	...	...	...	...	...
Polychlorinated biphenyls (PCBs)	001336-36-3	...	...	2.4E-5*	1.6E+0	3.2E-1*

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Pyrene	000129-00-0	...	...	...	2.3E+3	...
Radium	007440-14-4	...	...	...	...	...
Radon	010043-92-2	...	...	...	...	...
Selenium	007782-49-2	...	...	...	3.9E+2	...
Silver	007440-22-4	...	...	...	3.9E+2	...
Strontium	007440-24-6	...	...	...	4.7E+4*	...
Styrene	000100-42-5	...	1.0E+0	...	1.6E+4*	...
Tetrachlorobenzene, 1,2,4,5-	000095-94-3	...	...	...	2.3E+1	...
Tetrachlorodibenzo-p-dioxin**	041903-57-5	...	...	...	...	...
Tetrachlorodibenzo-p-dioxin 2,3,7,8- (TCDD)	001746-01-6	...	...	5.7E-11	...	4.3E-6
Tetrachlorodibenzofuran 2,3,7,8-	051207-31-9	...	...	5.7E-10	...	4.3E-5
Tetrachloroethane, 1,1,2,2-	000079-34-5	...	...	4.2E-5	...	3.2E+0
Tetrachloroethylene	000127-18-4	...	...	...	7.8E+2	1.2E+1
Thallium	007440-28-0	...	...	...	...	...
Toluene	000108-88-3	...	4.2E-1	...	1.6E+4*	...

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** Indicates new hazardous substance in current version of chemical data (JAN04).

Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Toxaphene	008001-35-2	...	...	7.6E-6	...	5.8E-1
Trichlorobenzene, 1,2,4-	000120-82-1	...	2.1E-1	...	7.8E+2	...
Trichloroethane, 1,1,1-	000071-55-6	...	2.3E+0*	...	...	...
Trichloroethane, 1,1,2-	000079-00-5	...	...	1.5E-4	3.1E+2	1.1E+1
Trichloroethylene (TCE)	000079-01-6	...	...	...	...	5.8E+1*
Trichlorofluoromethane	000075-69-4	...	7.3E-1	...	2.3E+4*	...
Trichlorophenol, 2,4,6-	000088-06-2	...	...	7.8E-4	...	5.8E+1*
Trichloropropane, 1,2,3-	000096-18-4	...	...	...	4.7E+2	9.1E-2
Trifluralin (Treflan)	001582-09-8	...	...	...	5.9E+2	8.3E+1*
Trinitrobenzene, 1,3,5-	000099-35-4	...	...	...	2.3E+3*	...
Vanadium	007440-62-2	...	...	...	5.5E+2	...
Vinyl acetate	000108-05-4	...	2.1E-1	...	7.8E+4*	...
Vinyl chloride	000075-01-4	...	1.0E-1*	2.8E-4	2.3E+2*	4.3E-1*
Xylene**	001330-20-7	...	1.0E-1	...	1.6E+4	...

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

Substance Name	CAS Number	AIR PATHWAY NAAQS NESHAPS (ug/m^3)	AIR PATHWAY Reference Dose Screen Conc (mg/m^3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m^3)	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Xylene, m-	000108-38-3	...	...	...	1.6E+5*	...
Xylene, o-	000095-47-6	...	...	...	1.6E+5*	...
Xylene, p-	000106-42-3	...	...	...	...	...
Zinc	007440-66-6	...	...	...	2.3E+4*	...

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Substance Name	CAS Number	DRINKING WATER MCL (pCi/L)	DRINKING WATER Cancer Risk Screen Conc (pCi/L)	FOOD CHAIN Cancer Risk Screen Conc (pCi/kg)	AIR Cancer Risk Screen Conc (pCi/m3)	SOIL UMTRCA (pCi/kg)	SOIL Cancer Risk Soil Ing (pCi/kg)	SOIL Cancer Risk Soil Gam (pCi/kg)
Americium 241	014596-10-2	1.5E+1*	4.6E-1*	1.3E+1*	1.7E-4*	...	3.7E+3*	...
Antimony 125(+D) (radionuclide)	014234-35-6	3.0E+2*	9.3E+0*	2.4E+2*	2.5E-1*	...	6.0E+4*	...
Cadmium 109 (radionuclide)	014109-32-1	6.0E+2*	9.5E+0*	2.6E+2*	2.2E-1*	...	7.0E+4*	...
Cesium 137(+D) (radionuclide)	010045-97-3	2.0E+2*	1.6E+0*	4.7E+1*	4.0E-1*	...	1.8E+4*	...
Cobalt 57 (radionuclide)	013981-50-5	1.0E+3*	4.6E+1*	1.2E+3*	2.3E+0*	...	2.9E+5*	...
Cobalt 60 (radionuclide)	010198-40-0	1.0E+2*	3.0E+0*	7.9E+1*	1.3E-1*	...	2.0E+4*	...
Iron 55 (radionuclide)	014681-59-5	2.0E+3*	5.5E+1*	1.5E+3*	6.0E+0*	...	3.8E+5*	...
Lead 210(+D) (radionuclide)	014255-04-0	...	3.7E-2	5.1E-1*	3.4E-4	...	3.0E+2*	...
Manganese 54 (radionuclide)	013966-31-9	3.0E+2*	2.1E+1*	5.7E+2*	8.1E-1*	...	1.5E+5*	...
Nickel 59 (radionuclide)	014336-70-0	3.0E+2*	1.8E+2*	4.5E+3*	1.0E+1*	...	1.1E+6*	...
Nickel 63 (radionuclide)	013981-37-8	5.0E+1*	7.1E+1*	1.9E+3*	2.9E+0*	...	4.4E+5*	...
Plutonium 236 (radionuclide)	015411-92-4	...	6.4E-1	1.8E+1*	2.1E-4*	...	4.6E+3*	...
Plutonium 238 (radionuclide)	013981-16-3	1.5E+1*	3.6E-1*	1.0E+1*	1.4E-4*	...	2.9E+3*	...
Plutonium 239 (radionuclide)	015117-48-3	1.5E+1*	3.5E-1*	1.0E+1*	1.4E-4*	...	2.9E+3*	...
Plutonium 240 (radionuclide)	014119-33-6	1.5E+1*	3.5E-1*	1.0E+1*	1.4E-4*	...	2.9E+3*	...

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Substance Name	CAS Number	DRINKING WATER		FOOD CHAIN	AIR	SOIL		
		MCL (pCi/L)	Cancer Risk Screen Conc (pCi/L)	Cancer Risk Screen Conc (pCi/kg)	Cancer Risk Screen Conc (pCi/m3)	UMTRCA (pCi/kg)	Cancer Risk Soil Ing (pCi/kg)	Cancer Risk Soil Gam (pCi/kg)
Plutonium 241(+D) (radionuclide)	014119-32-5	...	2.7E+1*	7.7E+2*	1.4E-2*	...	2.4E+5*	...
Plutonium 242 (radionuclide)	013982-10-0	1.5E+1*	3.7E-1*	1.1E+1*	1.5E-4*	...	3.0E+3*	...
Plutonium 243 (radionuclide)	015706-37-3	...	1.0E+2*	2.5E+3*	1.6E+1*	...	5.9E+5*	...
Plutonium 244(+D) (radionuclide)	014119-34-7	1.5E+1*	3.5E-1*	9.8E+0*	1.6E-4*	...	2.7E+3*	...
Radium 226(+D) (radionuclide)	013982-63-3	5.0E+0*	1.2E-1	3.4E+0*	4.1E-4	...	1.1E+3*	...
Radium 228(+D) (radionuclide)	015262-20-1	5.0E+0*	4.6E-2*	1.2E+0*	9.1E-4*	...	3.5E+2*	...
Radon 222 (+D)(radionuclide)	014859-67-7	...	...	...	6.3E-1	...	...	...
Silver 108m(+D) (radionuclide)	014391-65-2	...	5.8E+0*	1.6E+2*	1.8E-1*	...	4.1E+4*	...
Silver 110m (radionuclide)	014391-76-5	9.0E+1*	4.8E+0*	1.3E+2*	1.7E-1*	...	3.4E+4*	...
Strontium 90(+D) (radionuclide)	010098-97-2	8.0E+0*	6.4E-1*	1.8E+1*	4.2E-2*	...	5.5E+3*	...
Technetium 99 (radionuclide)**	014133-76-7	9.0E+2	1.7E+1	4.4E+2	3.4E-1*	...	1.0E+5	...
Thallium 204 (radionuclide)	013968-51-9	3.0E+2*	8.1E+0*	2.1E+2*	1.9E+0*	...	5.2E+4*	...
Thorium 227 (radionuclide)	015623-47-9	...	1.0E+0*	2.5E+1*	1.4E-4*	...	5.8E+3*	...
Thorium 228(+D) (radionuclide)	014274-82-9	1.5E+1*	1.6E-1	4.2E+0*	3.3E-5*	...	9.8E+2*	...

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Substance Name	CAS Number	DRINKING WATER		FOOD CHAIN	AIR	SOIL		
		MCL (pCi/L)	Cancer Risk Screen Conc (pCi/L)	Cancer Risk Screen Conc (pCi/kg)	Cancer Risk Screen Conc (pCi/m3)	UMTRCA (pCi/kg)	Cancer Risk Soil Ing (pCi/kg)	Cancer Risk Soil Gam (pCi/kg)
Thorium 229(+D) (radionuclide)	015594-54-4	1.5E+1*	9.0E-2	2.5E+0*	2.1E-5*	...	6.2E+2*	...
Thorium 230 (radionuclide)	014269-63-7	1.5E+1*	5.2E-1*	1.5E+1*	1.7E-4*	...	3.9E+3*	...
Thorium 231 (radionuclide)	014932-40-2	...	2.2E+1*	5.4E+2*	3.1E+0*	...	1.2E+5*	...
Thorium 232 (radionuclide)	007440-29-1	1.5E+1*	4.7E-1*	1.3E+1*	1.1E-4*	...	3.4E+3*	...
Thorium 234 (radionuclide)	015065-10-8	...	2.1E+0*	5.8E+1*	1.6E-1*	...	1.2E+4*	...
Tritium	010028-17-8	...	4.3E+2*	1.2E+4*	2.4E+1*	...	3.6E+6*	...
Uranium 232 (radionuclide)	014158-29-3	2.0E+1*	1.6E-1*	4.6E+0*	2.4E-4*	...	1.4E+3*	...
Uranium 233 (radionuclide)	013968-55-3	2.0E+1*	6.6E-1*	1.8E+1*	4.1E-4*	...	5.0E+3*	...
Uranium 234 (radionuclide)	013966-29-5	2.0E+1*	6.7E-1*	1.8E+1*	4.2E-4*	...	5.0E+3*	...
Uranium 235(+D) (radionuclide)	015117-96-1	2.0E+1*	6.6E-1*	1.8E+1*	4.7E-4*	...	4.9E+3*	...
Uranium 236(+D) (radionuclide)	013982-70-2	2.0E+1*	7.1E-1*	1.9E+1*	4.5E-4*	...	5.3E+3*	...
Uranium 238(+D) (radionuclide)	007440-61-1	2.0E+1*	5.5E-1*	1.5E+1*	5.1E-4*	...	3.8E+3*	...
Zinc 65 (radionuclide)	013982-39-3	3.0E+2*	4.1E+0*	1.1E+2*	8.2E-1*	...	3.2E+4*	...

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Footnote Code	Footnote Description
A	This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.
B	This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.
C	This criterion is based on carcinogenicity of 10^{-6} risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10^{-5}, move the decimal point in the recommended criterion one place to the right).
D	Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. The recommended water quality criteria value was calculated by using the previous 304(a) aquatic life criteria expressed in terms of total recoverable metal, and multiplying it by a conversion factor (CF). The term "Conversion Factor" (CF) represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. (Conversion Factors for saltwater CCCs are not currently available. Conversion factors derived for saltwater CMCs have been used for both saltwater CMCs and CCCs). See "Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria," October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR§131.36(b)(1). Conversion Factors applied in the table can be found in Appendix A to the Preamble- Conversion Factors for Dissolved Metals (which is attached below).
E	The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 100 mg/L. Criteria values for other hardness may be calculated from the following: CMC (dissolved) = $\exp\{m_A [\ln(\text{hardness})] + b_A\}$ (CF), or CCC (dissolved) = $\exp\{m_C [\ln(\text{hardness})] + b_C\}$ (CF) and the parameters specified in Appendix B- Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent (which is attached below).
F	Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = exp(1.005(pH)-4.869); CCC = exp(1.005(pH)-5.134). Values displayed in table correspond to a pH of 7.8.
G	This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA 440/5-80-046), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5- 80-052), Hexachlorocyclohexane (EPA 440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.
H	No criterion for protection of human health from consumption of aquatic organisms excluding water was presented in the 1980 criteria document or in the *1986 Quality Criteria for Water*. Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.
I	This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA).
J	This fish tissue residue criterion for methylmercury is based on a total fish consumption rate of 0.0175 kg/day.

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Footnote Code	Footnote Description
K	This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*, (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.
L	The CMC = 1/[(f1/CMC1) + (f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.82 µg/l, respectively.
M	EPA is currently reassessing the criteria for arsenic.
N	This criterion applies to total pcbs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)
O	The derivation of the CCC for this pollutant (Endrin) did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.
P	Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.
Q	This recommended water quality criterion is expressed as µg free cyanide (as CN)/L.
R	This value for selenium was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303(c) aquatic life criterion. EPA is currently working on this criterion and so this value might change substantially in the near future.
S	This recommended water quality criterion for arsenic refers to the inorganic form only.
T	This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor (0.996- CMC or 0.922- CCC) that was used in the GLI to convert this to a value that is expressed in terms of dissolved metal.
U	The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.
V	This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.
W	Although EPA has not published a completed criteria document for butylbenzyl phthalate it is EPA's understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that industry intends to publish in the peer reviewed literature draft aquatic life criteria generated in accordance with EPA Guidelines. EPA will review such criteria for possible issuance as national WQC.
X	There is a full set of aquatic life toxicity data that show that DEHP is not toxic to aquatic organisms at or below its solubility limit.
Y	This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
Z	A more stringent MCL has been issued by EPA. Refer to drinking water regulations (40 CFR 141) or Safe Drinking Water Hotline (1-800-426-4791) for values.
aa	This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80- 038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated biphenyls (EPA 440/5-80-068), Toxaphene (EPA 440/5-86-006). This CCC is currently based on the Final Residue Value (FRV) procedure. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria. Therefore, the Agency anticipates that future revisions of this CCC will not be based on the FRV procedure.

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Footnote Code	Footnote Description
bb	This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA 882-R-01-001), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5- 84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87- 003).
cc	When the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
dd	The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 µg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.
ee	This recommended water quality criterion was derived on page 43 of the mercury criteria document (EPA 440/5- 84-026, January 1985). The saltwater CCC of 0.025 ug/L given on page 23 of the criteria document is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
ff	This recommended water quality criterion was derived in *Ambient Water Quality Criteria Saltwater Copper Addendum* (Draft, April 14, 1995) and was promulgated in the Interim final National Toxics Rule (60FR22228- 222237, May 4, 1995).
gg	EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.
hh	This recommended water quality criterion was derived from data for inorganic mercury (II), but is applied here to total mercury. If a substantial portion of the mercury in the water column is methylmercury, this criterion will probably be under protective. In addition, even though inorganic mercury is converted to methylmercury and methylmercury bioaccumulates to a great extent, this criterion does not account for uptake via the food chain because sufficient data were not available when the criterion was derived.
ii	This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).
F2	The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).
G2	This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Aluminum (EPA 440/5-86-008); Chloride (EPA 440/5-88-001); Chloropyrifos (EPA 440/5-86-005).
I2	This value for aluminum is expressed in terms of total recoverable metal in the water column.
L2	There are three major reasons why the use of Water-Effect Ratios might be appropriate. (1) The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH= 6.5-6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time. (2) In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide. (3) EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg aluminum/L, when either total recoverable or dissolved is measured.

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Conversion Factors for Dissolved Metals				
Metal	**Conversion Factor Freshwater CMC**	**Conversion Factor Freshwater CCC**	**Conversion Factor Saltwater CMC**	**Conversion Factor Saltwater CMC**
Arsenic	1.000	1.000	1.000	1.000
Cadmium	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]	0.994	0.994
ChromiumIII	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	0.960	0.960	0.83	0.83
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[ln hardness)(0.145712)]	0.951	0.951
Mercury	0.85	0.85	0.85	0.85
Nickel	0.998	0.997	0.990	0.990
Selenium	--	--	0.998	0.998
Silver	0.85	--	0.85	--
Zinc	0.978	0.986	0.946	0.946

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

3c

Parameters for Calculating Freshwater Dissolved Metals That are Hardness Dependent						
					Conversion Factors (CF)	
Chemical	m_A	b_A	m_C	b_C	**CMC**	**CCC**
Cadmium	1.0166	-3.924	0.7409	-4.719	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]
Chromium III	0.8190	3.7256	0.8190	0.6848	0.316	0.860
Copper	0.9422	-1.700	0.8545	-1.702	0.960	0.960
Lead	1.273	-1.460	1.273	-4.705	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]
Nickel	0.8460	2.255	0.8460	0.0584	0.998	0.997
Silver	1.72	-6.59	--	--	0.85	--
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

Hardness-dependent metals' criteria may be calculated from the following:

CMC (dissolved) = exp $\{m_A [\ln(\text{hardness})] + b_A\}$ (CF)

CCC (dissolved) = exp $\{m_C [\ln(\text{hardness})] + b_C\}$ (CF)

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).
** Indicates new hazardous substance in current version of chemical data (JAN04).

REFERENCE 3

STATE UNIVERSITY, NEW MEXICO (298535)

Period of Record Monthly Climate Summary

Period of Record : 4/ 1/1959 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	58.2	63.2	70.0	77.8	86.4	94.6	94.9	92.1	87.2	78.5	66.8	57.9	77.3
Average Min. Temperature (F)	28.1	31.5	37.0	43.6	52.0	61.2	67.2	65.3	58.4	45.8	34.5	28.3	46.1
Average Total Precipitation (in.)	0.47	0.40	0.24	0.21	0.30	0.75	1.42	2.12	1.28	0.88	0.47	0.70	9.23
Average Total SnowFall (in.)	1.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.4	3.7
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 99.6% Min. Temp.: 99.6% Precipitation: 99.6% Snowfall: 99.5% Snow Depth: 99.3%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

REFERENCE 4

Protecting Our Environment, Preserving The Enchantment

New Mexico Environment Department

Petroleum Storage Tank Bureau

Governor
Bill Richardson
♦♦♦
Lt. Governor
Diane Denish

Search >> Adv Search
NMED Links

Air Quality
Admin Services
All-Indian Pueblo Council
Application Services
AQB Air Monitoring
Bordering NM
Communication Dir
Construction Prog
Contact Us
DOE Oversight
Drinking Water
EG
EIB
EIdea Web Portal
Environmental Health
Environmental Justice
EPD
Food Program
Green Zia
Ground Water Quality
Hazardous Waste
Hearing Officer
Information Technology Division
Job Opportunities
Leaking Petro Tank
Licensing
Liquid Waste
Meetings & Hearings
Mission Statement
OSHA
OOTS
OSHRC
Org Chart
Permits
Petro Storage Tanks
Pollution Prevention
Programs
Press Releases
Pu Notices
Pub Record Request
Radiation Control
Regulations & Laws
Site Map
Special Reports
Spill Alert
Solid Waste

Past and Current Leak Sites by City

Please see PST Regulations 20.5.15 NMAC - Corrective Action Fund Use and Expenditures, for more information about the LST ranking system.

This information is for the PST owner/operator and other government agencies. You may download this data for your use provided this information (numbers, dates, and names) is not altered, misused or manipulated. This report is ordered from left to right with field names: **RANK, PRIORITY, SCORE, RELEASE_ID, RELEASE_NAME, FACILITY_ID, PHYSICAL_ADDRESS, CITY, ST, ZIP, COUNTY, REPORT_DATE, CURRENT_STATUS, STATUS_DATE, STAFF.**

- Download Text File (approx 1250K)

Please refer to the table below for a complete description of fields:

Field	Description
Rank	Relative ordering of releases based on score of site specific risk factors. Those sites with a number one ranking have the most serious impact to human health, safety and welfare, and the environment.
Priority	Priority 1 means release has impacts to water supplies, utilities, explosive or toxic vapors, or ecological damage. Priority 2 means contamination includes nonaqueous phase liquid or contaminant saturated soil. Priority 3 means actionable levels of contamination in soil and/or groundwater.
Score	The arithmetic total of all criteria used to determine relative rank.
Release_ID	Unique numeric identifier for a release.
Release_Name	Name by which release is known
Facility_ID	Unique numeric identifier for a physical location of storage tanks.
Physical_Address	Release site location by street address
City	Release site location by city
St	Release site location by state
Zip	Release site location by postal code.
County	An administrative division of state.
Report_Date	Date release was reported to NMED

Cabinet Secretary
Ron Curry
♦♦♦
Deputy Secretary
Derrith Watchman-Moore

SDWIS
Drinking Water Watch

Bordering New Mexico

water
land
air
waste

NMED RFP
Request for Proposals

Environmental GIS

2006 Summe Internship

www.nmclimatechange
NM Climate Chang

Pollution Prevention Program

Green Zia Program

Environmental Justice

New Mexico Environment Dept
PO Box 26110
1190 St Francis Dr
Suite #N4050
Santa Fe, NM 87502
Tel. (800) 219-6157
(505) 827-2855

Current_Status	Last corrective action milestone achieved. *Note: When releases achieve "No Further Action Required," they drop off of the ranking.*
Status_Date	Date status achieved.
Staff	NMED employee who serves as the single point of contact for the release.

How to use reports that are delimited (text)

This page was last updated February 24, 2006

This page was last updated February 24, 2006

Reported LUST Sites Within a Four Mile Radius

Highlighted sites are within one mile of contaminated site

Name	Street Address	City	State	Zip	County	Report Date	Status	Status Date	Staff
Abc Automotive Svc	550 E Madrid	Las Cruces	NM	88001	Dona Ana	2/10/1995	No Further Action Required	7/31/1997	Timothy Eckert
All About Cars	1695 W Picacho	Las Cruces	NM	88032	Dona Ana	1/7/1993	Investigation, Responsible Party	5/5/1993	Jeffery Mills
Amador Bulk Plant	Amador And Compress	Las Cruces	NM	88032	Dona Ana	8/30/2002	Cleanup, Responsible Party	6/13/2005	Christopher Holmes
Bar F 20/Earls Buy	901 S Valley Dr	Las Cruces	NM	88001	Dona Ana	12/22/1989	Cleanup, Responsible Party	5/1/1995	Christopher Holmes
Bar F 22	1900 N Main	Las Cruces	NM	88001	Dona Ana	12/15/1989	No Further Action Required	4/15/2005	Christopher Holmes
Bar F 25	1305 El Paseo Rd	Las Cruces	NM	88001	Dona Ana	12/15/1989	No Further Action Required	10/18/2001	Christopher Holmes
Binns Parcel	Corner Of Lohman And Telshor	Las Cruces	NM	88001	Dona Ana	1/25/1996	No Further Action Required	2/27/1996	UNKNOWN
Bradley Food Mart	1206 El Paseo Rd	Las Cruces	NM	88001	Dona Ana		No Further Action Required	9/10/2003	Delbert Utz
Burns Construction	2335 E Lohman	Las Cruces	NM	88004	Dona Ana	4/5/1993	No Further Action Required	4/8/1993	UNKNOWN
Byers University C	1640 S Solano Dr	Las Cruces	NM	88001	Dona Ana	4/22/1996	No Further Action Required	4/25/1996	UNKNOWN
Carneros Chevron	628 E Lohman	Las Cruces	NM	88004	Dona Ana	3/18/1992	No Further Action Required	4/17/1992	UNKNOWN
Chevron Main	Hwy 70 And Elks Dr	Las Cruces	NM	88001	Dona Ana	11/21/1989	No Further Action Required	6/4/1990	UNKNOWN
Circle K 278	617 W Picacho	Las Cruces	NM	88001	Dona Ana	1/31/1995	No Further Action Required	11/24/2003	John Kovacs
Country Club 66	Corner Elks Drive And Hwy 70	Las Cruces	NM	88005	Dona Ana	12/2/1991	No Further Action Required	7/10/1992	UNKNOWN

Name	Street Address	City	State	Zip	County	Report Date	Status	Status Date	Staff
Country Club Shell	2901 N Main St	Las Cruces	NM	88001	Dona Ana	3/18/1992	No Further Action Required	5/20/1992	Christopher Holmes
D S 1290	2222 S Valley Dr	Las Cruces	NM	88005	Dona Ana	3/1/1999	No Further Action Required	9/26/2001	John Kovacs
Diamond Shamrock 1	1401 E Lohman	Las Cruces	NM	88001	Dona Ana	11/25/1997	No Further Action Required	2/25/1999	Brian Salem
Diamond Shamrock 1	2222 S Valley Dr	Las Cruces	NM	88005	Dona Ana	11/20/1997	Investigation, Responsible Party	11/25/1997	John Kovacs
Dona Ana Cty Trans	2025 E Griggs Ave	Las Cruces	NM	88001	Dona Ana	6/5/1997	Investigation, Responsible Party	4/8/1998	Christopher Holmes
Eagle Qwik Mart	440 W Picacho	Las Cruces	NM	88005	Dona Ana	4/14/1998	Aggr Cleanup Completed, Resp Party	3/1/2003	George Beaumont
El Paso Electric C	555 S Compress Rd	Las Cruces	NM	88001	Dona Ana	9/23/1997	Investigation, Responsible Party	11/11/1998	George Beaumont
Elephant Butte Irr	530 S Melendres	Las Cruces	NM	88005	Dona Ana	4/6/1989	No Further Action Required	12/19/1989	UNKNOWN
Fenns Mini Mart	3985 S Main	Las Cruces	NM	88004	Dona Ana	10/16/2002	Investigation, Responsible Party	8/10/2004	George Beaumont
Former Station	1940 S Espina	Las Cruces	NM	88004	Dona Ana		No Further Action Required	9/15/1993	UNKNOWN
Gas Card Las Cruce	801 N Solano Dr	Las Cruces	NM	88001	Dona Ana	4/29/1997	No Further Action Required	7/1/1998	Timothy Eckert
Gene Peugh(Aamco)	1885 W Picacho	Las Cruces	NM	88005	Dona Ana	7/7/1995	Pre-Investigation, Confirmed Release	7/7/1995	Jeffery Mills
Hatch Bros Motor C	1401 Picacho W	Las Cruces	NM	88001	Dona Ana	8/10/1994	Investigation, Responsible Party	12/13/1994	Jeffery Mills

Name	Street Address	City	State	Zip	County	Report Date	Status	Status Date	Staff
Helweg And Farmer	533 N 17th St	Las Cruces	NM	88005	Dona Ana	8/12/1998	Aggr Cleanup Completed, Resp Party	4/19/2005	Christopher Holmes
Highway Texaco	400 S Valley Dr	Las Cruces	NM	88005	Dona Ana	12/6/1991	Aggr Cleanup Completed, Resp Party	4/4/1996	Delbert Utz
Ikard And Newsom	1655 W Picacho	Las Cruces	NM	88002	Dona Ana	1/3/1994	No Further Action Required	3/1/2001	UNKNOWN
Johnson Park	888 N Main	Las Cruces	NM	88004	Dona Ana	3/24/1995	Pre-Investigation, Confirmed Release	3/24/1995	Christopher Holmes
Las Cruces Sun New	256 W Las Cruces Ave	Las Cruces	NM	88001	Dona Ana	9/4/1989	No Further Action Required	2/20/1990	UNKNOWN
Lohman 66	1501 E Amador	Las Cruces	NM	88005	Dona Ana	9/1/1998	No Further Action Required	11/25/2003	Christopher Holmes
Lohman Conoco 2	2210 E Lohman	Las Cruces	NM	88001	Dona Ana	10/15/1999	NFA, Suspected Release	5/6/2005	Christopher Holmes
Lohman Shell	926 E Lohman	Las Cruces	NM	88001	Dona Ana	12/18/1998	Cleanup, Responsible Party	6/13/2005	Christopher Holmes
Lube N Go	2141 E Lohman	Las Cruces	NM	88001	Dona Ana	12/13/1995	No Further Action Required	1/2/2000	Timothy Eckert
Maloof	742 W Bowman	Las Cruces	NM	88001	Dona Ana	2/2/1990	No Further Action Required	7/7/1992	UNKNOWN
Mesilla Exxon	825 Avenida De Mesilla	Las Cruces	NM	88005	Dona Ana	2/7/1992	No Further Action Required	5/21/1992	UNKNOWN
Midtown Chevron	750 S Main	Las Cruces	NM	88004	Dona Ana	2/1/2000	Cleanup, Responsible Party	6/20/2005	John Kovacs
Mission Shell	1321 Avenida De Mesilla	Las Cruces	NM	88005	Dona Ana	7/20/1994	No Further Action Required	10/20/1994	UNKNOWN
Montgomery Ward	2300 E Lohman	Las Cruces	NM	88004	Dona Ana	1/10/1994	No Further Action Required	11/14/1994	UNKNOWN
Nmshtd Patrol Yard	US 70 MP 158 5	Las Cruces	NM	88001	Dona Ana	12/29/1993	No Further Action Required	7/31/1995	UNKNOWN

Name	Street Address	City	State	Zip	County	Report Date	Status	Status Date	Staff
North Main Self Se	1875 N Main	Las Cruces	NM	88001	Dona Ana	2/3/1999	Cleanup, Responsible Party	4/19/2005	Christopher Holmes
Ortegas Chevron	887 N Main	Las Cruces	NM	88004	Dona Ana	10/13/1989	No Further Action Required	2/28/1990	UNKNOWN
Palm'S Shell	2417 W Picacho	Las Cruces	NM	88005	Dona Ana	12/1/1995	Cleanup, Responsible Party	1/15/1999	George Beaumont
Panchas Villa	9705 Hwy 70 E	Las Cruces	NM	88012	Dona Ana		No Further Action Required	12/3/1998	Jeffery Mills
Phillips 66 Lc	Corner Elks Drive And Hwy 70	Las Cruces	NM	88005	Dona Ana	9/5/1991	No Further Action Required	9/10/1991	UNKNOWN
Pic Quick 1135	3916 W Picacho	Las Cruces	NM	88001	Dona Ana	11/30/2004	Pre-Investigation, Confirmed Release	11/30/2004	George Beaumont
Pic Quick 235	1750 N Solano	Las Cruces	NM	88001	Dona Ana	1/22/1999	No Further Action Required	4/15/2003	George Beaumont
Pic Quik 1111	1230 Madrid Rd	Las Cruces	NM	88001	Dona Ana	2/24/1995	No Further Action Required	10/17/2000	Danny Valenzuela
Pic Quik 1121	1250 N Valley Dr	Las Cruces	NM	88001	Dona Ana	8/5/1996	Cleanup, Responsible Party	12/20/2001	Delbert Utz
Pic Quik 1122	2601 Dona Ana Rd	Las Cruces	NM	88001	Dona Ana	7/12/1996	Aggr Cleanup Completed, Resp Party	10/30/2001	Delbert Utz
Pic Quik 229	2701 Elks Dr	Las Cruces	NM	88001	Dona Ana	9/1/1998	No Further Action Required	8/25/1999	Jeffery Mills
Picacho Shell	1196 W Picacho	Las Cruces	NM	88005	Dona Ana	7/21/1995	Cleanup, Responsible Party	6/13/2005	Christopher Holmes
Pilot Travel Cente	2681 W Amador	Las Cruces	NM	88005	Dona Ana	3/9/2004	Pre-Investigation, Confirmed Release	3/9/2004	George Beaumont
Porter Oil	306 S Motel Blvd	Las Cruces	NM	88005	Dona Ana	4/25/1988	No Further Action Required	11/20/1990	UNKNOWN

Name	Street Address	City	State	Zip	County	Report Date	Status	Status Date	Staff
Quik Chek	161 E Madrid	Las Cruces	NM	88001	Dona Ana	2/28/1997	Investigation, Responsible Party	11/10/1998	Delbert Utz
Qvs Mobile Homes	1600 W Picacho	Las Cruces	NM	88005	Dona Ana	10/20/1995	Aggr Cleanup Completed, Resp Party	3/28/2002	Jeffery Mills
R C Sanders Trucki	1880 W Picacho	Las Cruces	NM	88005	Dona Ana	10/23/1995	Cleanup, Responsible Party	2/28/2004	Jeffery Mills
Ross Bell Estate S	1144 W Picacho	Las Cruces	NM	88005	Dona Ana	1/21/1999	No Further Action Required	4/11/2005	Christopher Holmes
Ryder Truck Rental	2802 W Amador	Las Cruces	NM	88005	Dona Ana	7/3/1991	No Further Action Required	8/21/1991	UNKNOWN
Sandoval Dodge	955 S Valley Dr	Las Cruces	NM	88005	Dona Ana	1/28/2000	Pre-Investigation, Confirmed Release	1/28/2000	George Beaumont
Sav-O-Mat B	920 El Paseo Rd	Las Cruces	NM	88001	Dona Ana		Pre-Investigation, Suspected Release	10/21/2005	Delbert Utz
Scotts Auto Sales	1835 N Main	Las Cruces	NM	88044	Dona Ana	7/27/1995	Cleanup, Responsible Party	4/19/2005	Christopher Holmes
Sierra Ice & Water	2855 B West Picacho Ave	Las Cruces	NM	88005	Dona Ana	10/17/1995	Cleanup, Responsible Party	4/19/2005	Christopher Holmes
Siesta Rv Park	1551 Avenida De Mesilla	Las Cruces	NM	88005	Dona Ana	12/20/1994	No Further Action Required	11/6/2001	John Kovacs
South Valley Pront	2635 S Valley Dr	Las Cruces	NM	88004	Dona Ana	6/8/1995	No Further Action Required	8/3/1995	UNKNOWN
Speedys	742 E Lohman	Las Cruces	NM	88044	Dona Ana	2/17/1999	Cleanup, Responsible Party	6/13/2005	Christopher Holmes
Support Services	1501 E Hadley St	Las Cruces	NM	88001	Dona Ana	5/5/1997	No Further Action Required	8/28/2003	Danny Valenzuela

Name	Street Address	City	State	Zip	County	Report Date	Status	Status Date	Staff
Sw Disposal Corp	2485 W Amador Ave	Las Cruces	NM	88005	Dona Ana	7/27/1994	No Further Action Required	4/26/1995	UNKNOWN
Sweet Indulgance C	1702 El Paseo	Las Cruces	NM	88001	Dona Ana	5/15/2003	Investigation, Responsible Party	7/1/2003	Jeffery Mills
Target	1600 N Solano	Las Cruces	NM	88001	Dona Ana	3/31/2006	Pre-Investigation, Confirmed Release	3/31/2006	Christopher Holmes
The Lantern	1311 Avenida De Mesilla	Las Cruces	NM	88004	Dona Ana	3/25/2002	Cleanup, Responsible Party	4/1/2005	Jeffery Mills
Tire Center Plus	1165 El Paseo	Las Cruces	NM	88001	Dona Ana	12/20/1996	No Further Action Required	5/30/2002	Christopher Holmes
Twin Tex Texaco	440 S Main	Las Cruces	NM	88001	Dona Ana	12/6/1991	Cleanup, Responsible Party	6/20/2005	John Kovacs
University Chevron	1600 S Solano	Las Cruces	NM	88004	Dona Ana	9/26/1997	Pre-Investigation, Confirmed Release	9/26/1997	Delbert Utz
University Shell	1305 S Solano Dr	Las Cruces	NM	88001	Dona Ana	4/16/1998	No Further Action Required	8/3/2001	John Kovacs
University Texaco	2401 S Main St	Las Cruces	NM	88001	Dona Ana	5/6/1994	Cleanup, Responsible Party	9/26/2001	John Kovacs
Us Border Patrol	2320 Temple St	Las Cruces	NM	88004	Dona Ana	2/28/1992	No Further Action Required	4/6/1993	UNKNOWN
Valley Pic Quik	Hwy 85 N	Las Cruces	NM	88005	Dona Ana	11/6/1998	Investigation, Responsible Party	6/13/2005	Christopher Holmes
Vickers 2286	1206 El Paseo Rd	Las Cruces	NM	88001	Dona Ana	4/13/1992	Aggr Cleanup Completed, Resp Party	9/10/2003	Delbert Utz
Vintage Car Wash	1805 E Lohman Ave	Las Cruces	NM	88001	Dona Ana	10/12/1995	No Further Action Required	7/24/1996	UNKNOWN

Name	Street Address	City	State	Zip	County	Report Date	Status	Status Date	Staff
Wallace Chevrolet	1601 S Main	Las Cruces	NM	88001	Dona Ana	8/28/1996	Investigation, Responsible Party	11/12/1996	Christopher Holmes
Whites Texaco	1701 N Main	Las Cruces	NM	88001	Dona Ana	6/26/1990	No Further Action Required	8/7/1995	UNKNOWN
Worley Mills Site	421 N Mesilla	Las Cruces	NM	88001	Dona Ana	1/13/1989	No Further Action Required	5/5/1989	UNKNOWN

REFERENCE 5

Cemeteries
San Albino's Cem ws Hwy 28 (Mes)
San Jose Cem 769 E Griggs
Tortugas Cem ss San Diego (Tor)

Ceramic Tile
STRYKER'S INC 1418 S Solano Dr ΔJA 6-2601 ΔJA 4-7705

Cha s of Commerce
M LA VALLEY CHAMBER OF MMERCE 503 N Main ΔJA 4-1968

Chartered Bus Service
GREYHOUND BUS DEPOT 509 N Church ΔJA 4-7481

Checking Accounts
FARMERS & MERCHANTS BK 417 N Main JA 6-5546, br ofc S Solano Dr & California ΔJA 6-2517
FIRST NATL BK OF LAS CRUCES 131 N Main ΔJA 6-6674, WSMR br Δ3282

Children's Wear
STORTZ NURSERY NOOK 390 S Alameda Blvd ΔJA 6-6365

Chiropodists
Clemenic W W 124 N Church

Chiropractors
Darr W W 403 S Solano Dr
Eshelman P I 616 W Picacho
Horton L T 203 E Lohman
Lathrop E G es Dona Ana Rd
Pollard F W 939 N Main

Christmas Club Deposits
FARMERS & MERCHANTS BK 417 N Main ΔJA 6-5546, br ofc S Solano Dr & California ΔJA 6-2517
FIRST NATL BK OF LAS CRUCES 131 N Main ΔJA 6-6674, WSMR br Δ3282

Church Construction Contractors
RIO GRANDE CONSTN CO 606 W Amador ΔJA 6-2281

Ch es
tolica Ch 1225 Ridgetop
ehem Luth Missouri Synagogue 1702 Missouri
Central Asmbly of God Church 1016 Arizona
Church of Christ 800 N Miranda
Church of Christ 1520 N Mesquite
Church of God 918 Chaparro
Church of God of Prophecy 805 Mimbres
Church of Jesus Christ of Latter Day Saints 505 S Miranda
Church of the Nazarene 617 W Picacho
College Ch of Christ 2401 S Espina

1960

College Hts Ch of Christ 1401 Boutz Rd
Community Christian Ch 1505 California
El Cavario Meth Ch 314 N Campo
First Asmbly of God 1349 Van Patten
First Bapt Ch ss 6th (MP)

First Bapt Ch 106 S Miranda
First Christian Ch 501 N Alameda Blvd
First Ch of God 1279 Davis
First Free Meth Ch 1430 Pecos
First United Presbyn Ch 324 W Las Cruces
Grandview Bapt Ch 900 Chaparro
Holy Trinity Luth Ch 266 W Court
Iglesia Christiana de Los Assemblios de Dios 850 E May
Iglesia De Cristo 625 N Campo
IMMACULATE HEART OF MARY CH 1290 S Espina ΔJA 6-5793
Jehovah's Witnesses 1530 Arizona
La Iglesia De Jesucristo De Los Santos De Los Ultimes Dias 310 N Tornillo
Our Lady of Guadalupe Ch ws Paroquia (Tor)
Our Lady of Health 1168 N Mesquite
Our Lady of Purification Ch Dona Ana N M
Phillips Chapel Christian Meth Ch 640 N Tornillo
Reorganized Ch of Jesus Christ 1230 Montana
St Andrews Epis Ch 520 N Alameda Blvd
ST GENEVIEVE'S CH 200 N Main ΔJA 6-5851
St James Epis Ch ns College (MP)
St John Missionary Bapt Ch 1620 N Mesquite
St Paul's Meth Ch 225 W Griggs
San Albino Cath Ch ns Calle De Santiago (Mes)
Second Bapt Ch 405 E Hadley
Spanish Ch of the Nazarene 1144 E Hadley
Spanish Seven Day Adventist 330 N San Pedro
Unitarian Fellowship Ch 2600 Chaparral
United Pentecostal Ch 115 W Chestnut
United Presbyn Ch 1701 University
University Hts Bapt Ch 1590 California
Valley View Meth Ch 2000 Locust
Westside Bapt Ch 1300 6th

Cinders
ASSOCIATED MATERIALS CO 224 W Amador ΔJA 4-4134

City Directory Publishers
MULLIN-KILLE CO Home Ofc 40 W Water (PO Box 469) Chillicothe O ΔPR 3-2157

Cleaners and Dyers
LAS CRUCES LDRY & CLNRS 500 N Main ΔJA 6-6641

Clergymen
Anderson E C (Luth) 2130 Hixon Dr
Bazan Demetrio Jr (Asmbly of God) 850(r) E May
Benton M B (Christian) 638 N Tornillo
Brankel J D (Asmbly of God) 1198 Davis
Cardy C E (Presbyn) 1845 Anderson Dr
Crossman W J (Epis) ss College (MP)
Fernandez Gregory (Cath) ws Calle De Principal (Mes)
Fielder R A (Bapt) 1320 Wade
Franks R L 908 S Alamo
GEARY EUP P RIGHT REV MONSIGNOR (CATH) 200 N Main ΔJA 6-5851
Gonzalez Ruben (Ch of Christ) 1055 E Court
Grant R J (Ch of Christ) 2210 Turrentine Dr
Hall Carl (Christian) 325 W Mountain
Hanson E G (LDS) 1101 Branson
Hill Hurley (Ch of the Nazarene) 1319 Park Dr
Holladay O O (Bapt) 911 Chaparro
Jones F F (Presbyn) 1875 N Alameda Blvd
Knight H C (Pentecostal) 113 W Chestnut
Krohn O E (Luth) 1130 Gardner
Lake R L (Ch of Christ) 1469 Boutz Rd
Legg D M (Ch of God) 1109 Nevada
Lucus R F (Ch of God) 1120 6th
Lujan J E (Meth) 316 N Campo
McCoy H C (Meth) 1445 Pecos
Morman R J (Bapt) 641 W May
Nash J L (Ch of Christ) 1230 Ethel
Nichols J D (SDA) 1708 Foster
Park G C (Bapt) 2070 Hixon Dr
Parker G E (Ch of God) 498 W Chestnut
Pieper H K (Ch of the Nazarene) 1135 E Hadley
Porter R M (Ch of Jesus Christ) 1765 Hamiel Dr
Roure Emilio ws Paroquia (Tor)
RYAN W H (CATH) 1240 S Espina ΔJA 6-5793
Saez J G (Cath) 1018 N Mesquite
Seibel M H (Ch of Christ) 1242 Barker Rd
Smith B P (Epis) 705 N Alameda Blvd
Strickland W C (Meth) 1912 Idaho
Suniga Roman (Apostolic) 1205 Ridgetop
Terry E C (Bapt) 1415 5th
Wurgler Nelson (Meth) 434 Phillips Dr

Clothing
Aaronson Bros 108 N Main

1965

CHURCHES—Contd

Mesilla Valley Christian Church 1809 S El Paseo rd
Newman Center of St Albert the Great Catholic Church The 2615 S Solano dr
Our Lady of Health Catholic Church 1178 N Mesquite
Pentecostal Holiness Church 1620 E Lohman av
StAndrew's Episcopal Church 516 N Alameda blvd
StGenevieve's Catholic Church 200 N Main
StJames Protestant Episcopal Church E College av (MP)
StJohn Church of God in Christ 1615 N Mesquite
StJohn's Missionary Baptist Church 1255 N Solano dr
StPaul Methodist Church 225 W Griggs av
Second Baptist Church 405 E Hadley av
Seventh Day Adventist Church 330 N San Pedro
Temple Baptist Church 1590 E California av
Temple Beth El 702 Parker rd
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Choice B James 406 E Hadley av
Dixon George B 1445 Pecos
Easson Wm 1204 Cherry
Finley Everett F 1240 S Espina
Finochietto Arnold W 1018 N Mesquite
Franklin Norman R 1319 Park dr
Franks Raymond L 908 S Alamo
Godsoe J E 1655 Smith av
Gonzalez Ruben 701 S Mimbres
Green Florian A 305 W Hadley av
Harris James D 1711 Locust ct
Herrin Ronald D 1115 Gardner av
Hobert Lee G 500 College pl
Kelley Konrad E E College av (MP)
Lamb Carroll D 1722 Locust ct
Lewis Robt N 641 W May av
Lozano Salvador 625 N Campo
Lucas Robt F 1120 N 6th
Lujan J Eduardo 316 N Campo
Mayfield Henry H 1005 E Colorado av
Meiners Harry H jr 1818 E Missouri av
Menchaca Nicanor 900 E Bowman
Mercer Harry R 1321 W Van Patten av
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Morris Earl E 835 E Montana av
Pogue Milton L 460 Milton av
Potzer Mario Calle de Principal (M)
Pritchard Thetus 840 N Miranda
Ryan Wm H 200 N Main
Sanchez Gregorio 1135 E Hadley av
Schauer Blase 2615 S Solano dr
Schlater Richard A 1060 Mechem dr

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Channon Ralph Rev 103 St James Av
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Combs Robert H Rev 1500 Delano Dr
Davis C Evan Rev 705 N Alameda Blvd
Dixon Jonathan Rev 1445 Pecos St
Finley Everett F Rev 1240 S Espina St
Gaynor Laurence Rev 920b Parker Rd
Green Florian A Rev 305 W Hadley Av
Green Leon Rev 231 Oxford Dr
Grorud Milton Rev 2804 Devendale St
Hadly G F Rev 1135 E Hadley Av
Hinshow Ross 460 Milton Av
Hobert Lee G Rev 506 College Pl
Hughes Lloyd A Rev 434 Phillips Dr

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Lozano Salvador Rev 905 W Brown... Av
Mc Caskill Harrison E Rev 840 N ...nd...
Mc Williams Robt Rev 999 N 9th St
Morman Robt J Rev 2015 Turrentine Dr
Murphy Don D Rev 1550 Monte Vista Av
Neidigh Donald H Rev 1845 Anderson Dr
Penrod Joe L Rev 3209 Fairway Dr
Podruchny Peter Rev 903 Delta Dr
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Powell Larry Rev 1500 Delano Dr
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Riggs Earl G Rev Pentecostal Holiness Ch
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Salazar F H Rev 201 Capri Arc (MP)
Scott Robt D Rev 1410 Gardner Av

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Barrett Thurl M Rev 1715 Lester Av
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Choice Benny J Rev 3103 Oak Av
Coto Daniel I Rev 900 E Bowman Av
Culberson Thos L 209 W Mountain Av
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Ennen Clifton L Rev 1821 Newton St
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Hofer Paul A Rev 1895 Myrtle Av
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Mones Benjamin S Rev 100 S Espina St
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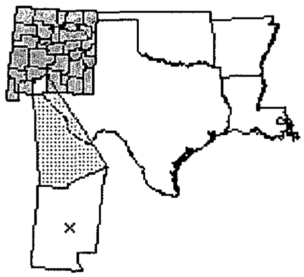
Superfund Site Progress Profile GRIGGS & WALNUT GROUND WATER PLUME (EPA ID: NM0002271286)

This profile provides you with information on EPA's cleanup progress at this Superfund site. This information includes: Site Location, Cleanup Progress Summary, Cleanup Impact Summary, Contamination & Exposure, Cleanup Process & Progress, and Government Performance and Results Act (GPRA) Milestones. Please use the links and the "More Details..." box to find more details on this site.

More Details...

More In-Depth Site Details (EPA Regional Content)
Site Contacts (EPA Cleanup Managers, etc.)
Site Description Prior to Cleanup
Additional Site Documents
Other Names for this Site (Aliases)

Site Location



Get an interactive map

EPA Region 6 >
Serving Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 66 tribes

Site Address: 153 NORTH COTTONWOOD ST. LAS CRUCES, New Mexico 88004

County: DONA ANA

Population within one mile: 10,001-50,000

Cleanup Progress Summary

Remedy Selected

Physical cleanup activities have not started.

view detailed list of cleanup activities at this site >>

The National Priorities List (NPL) is the list of the most hazardous sites, also known as Superfund sites, across the U.S. and its territories.

This site is on the NPL and is known as a "Final" NPL site (see glossary).

Superfund law requires that EPA give communities information about site progress and plans so that they can be actively involved in site cleanup decisions. Learn more about community involvement at this site >>

Cleanup Impact Summary

At each site, EPA assesses the risk to humans and the environment and determines the best approach to address the risk. During initial site studies and cleanup, EPA determines if current human exposures to contaminants are under control and takes actions to control any possible human exposures until cleanup has been completed. Once complete, cleanup provides long-term human health and environmental protection at the site.

OK **Under current conditions at this site, potential or actual human exposures are under control.**

The Problem: Contamination & Exposure

Contamination

Contaminants (i.e., hazardous substances, pollutants or contaminants) can be found in several different types of materials on the site including soil and other solid-based media and water or another liquid-based medium. (see glossary)

Contaminated Media: Data not available

EPA classifies contaminants found into groups or types.

Exposure

At each site, EPA determines the possibility for human and ecological contact (i.e., exposure) with contaminants at the site. If the possibility for exposure to contamination exists, EPA conducts a study known as a risk assessment. During the risk assessment, EPA determines if the site poses a risk to humans, and if so, identifies actions that can be taken to control any possible exposure to humans until site cleanup has been completed. Once complete, cleanup provides long-term human health and environmental protection at the site.

REFERENCE 7

NPL Site Narrative for Griggs & Walnut Ground Water Plume

GRIGGS & WALNUT GROUND WATER PLUME
Las Cruces, New Mexico

Federal Register Notice: June 14, 2001

Conditions at Proposal (January 11, 2001): The Griggs & Walnut Ground Water Plume site consists of a plume of perchloroethylene (PCE)-contaminated ground water underlying the area near the intersection of Griggs Avenue and Walnut Street in Las Cruces, Dona Ana County, New Mexico. The site is being proposed to the NPL because of the presence of this contaminant in ground water.

Low concentrations of PCE were first detected in water samples collected from two Las Cruces municipal water supply wells, Wells 21 and 27, in August 1993. The concentrations of PCE were well below the drinking water maximum contaminant level (MCL) of 5.0 micrograms/liter (ug/L) established for PCE by EPA. In January 1995, a water sample collected from a third municipal well, Well 18, while it was off-line following repairs, contained 32 ug/L of PCE. Follow-up samples were collected and Well 18 was kept off-line until analytical results were received. The concentrations of PCE in follow-up samples were less than 2.0 ug/L. Regular follow-up sampling of Well 18 continued. In January 1996, another sample collected from Well 18 contained 6.4 ug/L of PCE, but the concentrations of PCE in confirmation samples were 1.0 ug/L or less. Although the confirmation sample results indicated that PCE concentrations in water from Well 18 were below the MCL, Well 18 was permanently removed from service in September 1996 by the City of Las Cruces as a precaution. Since April 1998, PCE has also been detected regularly in water samples collected from an additional municipal well, Well 19. The concentrations (approximately 1 ug/L) are well below the MCL. In July 1999, PCE concentrations in samples from Well 27 increased to approximately 4.0 ug/L and have remained at this level. The Las Cruces municipal water system is currently and has been in complete compliance with the Safe Drinking Water Act and the New Mexico Water Supply Regulations.

The City of Las Cruces utilizes a total of 28 municipal supply wells to provide drinking water to approximately 83,000 individuals. The City of Las Cruces municipal supply wells are completed within the Santa Fe Group aquifer. The Santa Fe Group aquifer is a sole source aquifer for the region and produces most of the water used in metropolitan and industrial centers, as well as a significant proportion of the ground water used to supplement surface irrigation supplies.

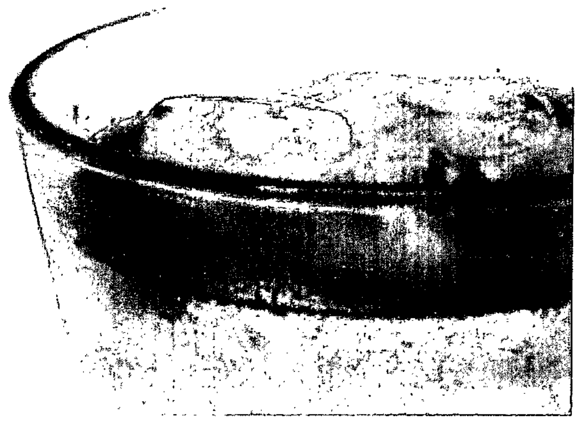
The NMED and Dona Ana County have installed ground water monitoring wells to determine the direction of ground water flow and horizontal extent of ground water contamination. The monitoring wells are 2 inches in diameter and extend only 5 to 15 feet below the water table. These wells are used only to assess ground water quality, not for water supply. Concentrations of PCE in samples from monitoring wells vary from < 0.50 to 53 ug/L. Ground water flow is currently east from the Rio Grande to the municipal wells near Interstate 25. Although it has yet to be completely characterized, the extent of the contaminated ground water plume is at least 8,000 feet long, approximately 2,500 feet wide, and 100 feet thick.

PCE is a manufactured chlorinated solvent which does not occur naturally in the environment and is classified as a dense non-aqueous phase liquid (DNAPL). DNAPLs are immiscible fluids with a density greater than water (i.e., DNAPLs sink in water). DNAPLs, such as PCE, present an extremely high contamination potential due to their extensive production and use, relatively high mobility as a separate phase, significant

REFERENCE 8

Drinking Water Contaminants

On this page



National Primary Drinking Water Regulations

National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. Visit the list of regulated contaminants with links for more details.

- List of Contaminants & their Maximum Contaminant Level (MCLs)
- Setting Standards for Safe Drinking Water to learn about EPA's standard-setting process
- EPA's Regulated Contaminant Timeline (PDF) (1 pp, 86 K) (About PDF)
- National Primary Drinking Water Regulations- The complete regulations regarding these contaminants availible from the Code of Federal Regulations Website

List of Contaminants & their MCLs

- Microorganisms
- Disinfectants
- Disinfection Byproducts
- Inorganic Chemicals
- Organic Chemicals
- Radionuclides

Information on this section

- Alphabetical List (PDF) (6 pp, 396 K) (About PDF) EPA 816-F-03-016, June 2003
- The links provided below are to either Consumer Fact Sheet, Rule Implementation web sites, or PDF files. (About PDF)

Microorganisms

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Cryptosporidium (pdf file)	zero	TT [3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and fecal animal waste
Giardia lamblia	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste
Heterotrophic plate	n/a	TT[3]		

count			HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	HPC measures a range of bacteria that are naturally present in the environment
Legionella	zero	TT[3]	Legionnaire's Disease, a type of pneumonia	Found naturally in water; multiplies in heating systems
Total Coliforms (including fecal coliform and *E. Coli*)	zero	5.0%[4]	Not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present[5]	Coliforms are naturally present in the environment; as well as feces; fecal coliforms and *E. coli* only come from human and animal fecal waste.
Turbidity	n/a	TT[3]	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	Soil runoff
Viruses (enteric)	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste

Disinfection Byproducts

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Bromate	zero	0.010	Increased risk of cancer	Byproduct of drinking water disinfection
Chlorite	0.8	1.0	Anemia; infants & young children: nervous system effects	Byproduct of drinking water disinfection
Haloacetic acids (HAA5)	n/a[6]	0.060	Increased risk of cancer	Byproduct of drinking water disinfection

Total Trihalomethanes (TTHMs)	none[7] ---------- n/a[6]	0.10 ---------- 0.080	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection

Disinfectants

Contaminant	MRDLG[1] (mg/L)[2]	MRDL[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Chloramines (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort, anemia	Water additive used to control microbes
Chlorine (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort	Water additive used to control microbes
Chlorine dioxide (as ClO_2)	MRDLG=0.8[1]	MRDL=0.8[1]	Anemia; infants & young children: nervous system effects	Water additive used to control microbes

Inorganic Chemicals

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Antimony	0.006	0.006	Increase in blood cholesterol; decrease in blood sugar	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	0[7]	0.010 as of 01/23/06	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer	Erosion of natural deposits; runoff from orchards, runoff from glass & electronicsproduction wastes
Asbestos (fiber >10 micrometers)	7 million fibers per liter	7 MFL	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits
Barium	2	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium	0.004	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium	0.005	0.005		

			Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (total)	0.1	0.1	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits
Copper	1.3	TT[8]; Action Level=1.3	Short term exposure: Gastrointestinal distress Long term exposure: Liver or kidney damage People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level	Corrosion of household plumbing systems; erosion of natural deposits
Cyanide (as free cyanide)	0.2	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride	4.0	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Lead	zero	TT[8]; Action Level=0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits
Mercury (inorganic)	0.002	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands
[illegible]rate (measured [illegible] Nitrogen)	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated,	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

			may die. Symptoms include shortness of breath and blue-baby syndrome.	
Nitrite (measured as Nitrogen)	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	0.05	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines
Thallium	0.0005	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Organic Chemicals

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Acrylamide	zero	TT[9]	Nervous system or blood problems; increased risk of cancer	Added to water during sewage/wastewater treatment
Alachlor	zero	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops
Atrazine	0.003	0.003	Cardiovascular system or reproductive problems	Runoff from herbicide used on row crops
Benzene	zero	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Discharge from factories; leaching from gas storage tanks and landfills
Benzo(a)pyrene (PAHs)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution lines
Carbofuran	0.04	0.04	Problems with blood, nervous system, or reproductive system	Leaching of soil fumigant used on rice

				and alfalfa
Carbon tachloride	zero	0.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities
Chlordane	zero	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned termiticide
Chlorobenzene	0.1	0.1	Liver or kidney problems	Discharge from chemical and agricultural chemical factories
2,4-D	0.07	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops
Dalapon	0.2	0.2	Minor kidney changes	Runoff from herbicide used on rights of way
1,2-Dibromo-3-chloropropane (DBCP)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
o-Dichlorobenzene	0.6	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories
p-Dichlorobenzene	0.075	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories
1,2-Dichloroethane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
1,1-Dichloroethylene	0.007	0.007	Liver problems	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene	0.07	0.07	Liver problems	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene	0.1	0.1		

			Liver problems	Discharge from industrial chemical factories
Dichloromethane	zero	0.005	Liver problems; increased risk of cancer	Discharge from drug and chemical factories
1,2-Dichloropropane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
Di(2-ethylhexyl) adipate	0.4	0.4	Weight loss, liver problems, or possible reproductive difficulties.	Discharge from chemical factories
Di(2-ethylhexyl) phthalate	zero	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories
Dinoseb	0.007	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables
oxin (2,3,7,8-TCDD)	zero	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories
Diquat	0.02	0.02	Cataracts	Runoff from herbicide use
Endothall	0.1	0.1	Stomach and intestinal problems	Runoff from herbicide use
Endrin	0.002	0.002	Liver problems	Residue of banned insecticide
Epichlorohydrin	zero	TT[9]	Increased cancer risk, and over a long period of time, stomach problems	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
ylbenzene	0.7	0.7	Liver or kidneys problems	Discharge from petroleum refineries
Ethylene dibromide	zero	0.00005		

			Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Discharge from petroleum refineries
Glyphosate	0.7	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use
Heptachlor	zero	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide
Heptachlor epoxide	zero	0.0002	Liver damage; increased risk of cancer	Breakdown of heptachlor
Hexachlorobenzene	zero	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopentadiene	0.05	0.05	Kidney or stomach problems	Discharge from chemical factories
Lindane	0.0002	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor	0.04	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl (Vydate)	0.2	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes
Polychlorinated biphenyls (PCBs)	zero	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Runoff from landfills; discharge of waste chemicals
Pentachlorophenol	zero	0.001	Liver or kidney problems; increased cancer risk	Discharge from wood preserving factories
Picloram	0.5	0.5	Liver problems	Herbicide runoff

Simazine	0.004	0.004	Problems with blood	Herbicide runoff
/rene	0.1	0.1	Liver, kidney, or circulatory system problems	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from factories and dry cleaners
Toluene	1	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories
Toxaphene	zero	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle
2,4,5-TP (Silvex)	0.05	0.05	Liver problems	Residue of banned herbicide
1,2,4-Trichlorobenzene	0.07	0.07	Changes in adrenal glands	Discharge from textile finishing factories
1,1,1-Trichloroethane	0.20	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane	0.003	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories
Trichloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from metal degreasing sites and other factories
Vinyl chloride	zero	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from plastic factories
Xylenes (total)	10	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories

Radionuclides

Contaminant	MCLG[1]	MCL or TT[1]	Potential Health Effects from	Sources of Contaminant in

	(mg/L)[2]	(mg/L)[2]	Ingestion of Water	Drinking Water
Alpha particles	none[7] ---------- zero	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation
Beta particles and photon emitters	none[7] ---------- zero	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation
Radium 226 and Radium 228 (combined)	none[7] ---------- zero	5 pCi/L	Increased risk of cancer	Erosion of natural deposits
Uranium	zero	30 ug/L as of 12/08/03	Increased risk of cancer, kidney toxicity	Erosion of natural deposits

Notes

[1] Definitions:
Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

[2] Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million.

[3] EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- Cryptosporidium: (as of1/1/02 for systems serving >10,000 and 1/14/05 for systems serving <10,000) 99% removal.
- Giardia lamblia: 99.9% removal/inactivation
- Viruses: 99.99% removal/inactivation
- Legionella: No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated, *Legionella* will also be controlled.

- Turbidity: At no time can turbidity (cloudiness of water) go above 5 nephelolometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples in any month. As of January 1, 2002, turbidity may never exceed 1 NTU, and must not exceed 0.3 NTU in 95% of daily samples in any month.
- HPC: No more than 500 bacterial colonies per milliliter.
- Long Term 1 Enhanced Surface Water Treatment (Effective Date: January 14, 2005); Surface water systems or (GWUDI) systems serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, Cryptosporidium removal requirements, updated watershed control requirements for unfiltered systems).
- Filter Backwash Recycling; The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

[4] more than 5.0% samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or E. coli if two consecutive TC-positive samples, and one is also positive for E.coli fecal coliforms, system has an acute MCL violation.

[5] Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a special health risk for infants, young children, and people with severely compromised immune systems.

[6] Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L). Chloroform is regulated with this group but has no MCLG.
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L). Monochloroacetic acid, bromoacetic acid, and dibromoacetic acid are regulated with this group but have no MCLGs.

[7] MCLGs were not established before the 1986 Amendments to the Safe Drinking Water Act. Therefore, there is no MCLG for this contaminant.

[8] Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.

[9] Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows:

- Acrylamide = 0.05% dosed at 1 mg/L (or equivalent)
- Epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent)

...ional Secondary Drinking Water Regulations

...ional Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

- National Secondary Drinking Water Regulations - The complete regulations regarding these contaminants available from the Code of Federal Regulations Web Site.
- For more information, read Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals

List of National Secondary Drinking Water Regulations

Contaminant	Secondary Standard
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

Unregulated Contaminants

This list of contaminants which, at the time of publication, are not subject to any proposed or promulgated national primary drinking water regulation (NPDWR), are known or anticipated to occur in public water systems, and may require regulations under SDWA. For more information check out the list, or vist the Drinking Water Contaminant Candidate List (CCL) web site.

- Drinking Water Contaminant Candidate List 2
- Drinking Water Contaminant Candidate List (CCL) Web Site
- Unregulated Contaminant Monitoring Program (UCM)
- **Information on specific unregulated contaminants**
    - MTBE (methyl-t-butyl ether) in drinking water

REFERENCE 9

20.6.2 NMAC

NEW MEXICO
WATER QUALITY CONTROL COMMISSION
REGULATIONS

Effective July 16, 2006

New Mexico Water Quality Control Commission
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

C. The standards are not intended as maximum ranges and concentrations for use, and nothing herein contained shall be construed as limiting the use of waters containing higher ranges and concentrations.
[2-18-77; 20.6.2.3101 NMAC - Rn, 20 NMAC 6.2.III.3101, 1-15-01]

20.6.2.3102: [RESERVED]
[12-1-95; 20.6.2.3102 NMAC - Rn, 20 NMAC 6.2.III.3102, 1-15-01]

20.6.2.3103 STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR LESS: The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection D of Section 20.6.2.3109 NMAC. Regardless of whether there is one contaminant or more than one contaminant present in ground water, when an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B, or C of this section, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably foreseeable future use in excess of the standards of this section. These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "*methods for chemical analysis of water and waste of the U.S. environmental protection agency*," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total unfiltered concentrations of the contaminants.

A. **Human Health Standards**-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

(1) Arsenic (As)....................0.1 mg/l
(2) Barium (Ba)....................1.0 mg/l
(3) Cadmium (Cd)....................0.01 mg/l
(4) Chromium (Cr)....................0.05 mg/l
(5) Cyanide (CN)....................0.2 mg/l
(6) Fluoride (F)....................1.6 mg/l
(7) Lead (Pb)....................0.05 mg/l
(8) Total Mercury (Hg)....................0.002 mg/l
(9) Nitrate (NO_3 as N)....................10.0 mg/l
(10) Selenium (Se)....................0.05 mg/l
(11) Silver (Ag)....................0.05 mg/l
(12) Uranium (U)....................0.03 mg/l
(13) Radioactivity: Combined Radium-226 & Radium-228....................30 pCi/l
(14) Benzene....................0.01 mg/l
(15) Polychlorinated biphenyls (PCB's)....................0.001 mg/l
(16) Toluene....................0.75 mg/l
(17) Carbon Tetrachloride....................0.01 mg/l
(18) 1,2-dichloroethane (EDC)....................0.01 mg/l
(19) 1,1-dichloroethylene (1,1-DCE)....................0.005 mg/l
(20) 1,1,2,2-tetrachloroethylene (PCE)....................0.02 mg/l
(21) 1,1,2-trichloroethylene (TCE)....................0.1 mg/l
(22) ethylbenzene....................0.75 mg/l
(23) total xylenes....................0.62 mg/l
(24) methylene chloride....................0.1 mg/l
(25) chloroform....................0.1 mg/l
(26) 1,1-dichloroethane....................0.025 mg/l
(27) ethylene dibromide (EDB)....................0.0001 mg/l
(28) 1,1,1-trichloroethane....................0.06 mg/l
(29) 1,1,2-trichloroethane....................0.01 mg/l
(30) 1,1,2,2-tetrachloroethane....................0.01 mg/l
(31) vinyl chloride....................0.001 mg/l

(32) PAHs: total naphthalene plus monomethylnaphthalenes..................0.03 mg/l
(33) benzo-a-pyrene..0.0007 mg/l

B. Other Standards for Domestic Water Supply

(1) Chloride (Cl) ....250.0 mg/l
(2) Copper (Cu) ....1.0 mg/l
(3) Iron (Fe) ....1.0 mg/l
(4) Manganese (Mn) ....0.2 mg/l
(6) Phenols..0.005 mg/l
(7) Sulfate (SO_4) ....600.0 mg/l
(8) Total Dissolved Solids (TDS) ....1000.0 mg/l
(9) Zinc (Zn) ....10.0 mg/l
(10) pH..between 6 and 9

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

(1) Aluminum (Al)..5.0 mg/l
(2) Boron (B) ....0.75 mg/l
(3) Cobalt (Co) ....0.05 mg/l
(4) Molybdenum (Mo) ....1.0 mg/l
(5) Nickel (Ni) ....0.2 mg/l

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04]
[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007. For any new water discharges, the uranium standard is effective 9-26-04.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly of indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers.
[2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the listed numerical standards of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less, and does not contain any toxic pollutant. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

B. Effluent which is discharged from a sewerage system used only for disposal of household and other domestic waste which is designed to receive and which receives 2,000 gallons or less of liquid waste per day;

C. Water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;

D. Discharges resulting from the transport or storage of water diverted, provided that the water diverted has not had added to it after the point of diversion any effluent received from a sewerage system, that the source of the water diverted was not mine workings, and that the secretary has not determined that a hazard to public health may result;

E. Effluent which is discharged to a watercourse which is naturally perennial; discharges to dry arroyos and ephemeral streams are not exempt from the discharge permit requirement, except as otherwise provided in this section;

F. Those constituents which are subject to effective and enforceable effluent limitations in a National Pollutant Discharge Elimination System (NPDES) permit, where discharge onto or below the surface of the ground so that water contaminants may move directly or indirectly into ground water occurs downstream from the outfall

REFERENCE 10

Feasibility Study Report
Version 1.2

Griggs and Walnut Ground Water Plume Superfund Site
Las Cruces, Doña Ana County, New Mexico
EPA ID NM0002271286

Remedial Action Contract No. EP-W-06-021
Task Order No. 0007-RICO-06HZ
CH2M HILL Project No. 346535
DCN 0007-02000

Prepared for:
U.S. Environmental Protection Agency

Prepared by:
CH2M HILL, INC

November 2006

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also detected east of I-25 at more recently installed monitor wells GWMW15-S (18 µg/L) and GWMW15-D (0.18 LJ µg/L), extending the plume footprint potentially east of the Las Cruces Flood Control Dam.

The GWP site plume extends laterally west-to-east from near monitor well GWMW06 and CLC Well No. 10 eastward beyond the Las Cruces Flood Control Dam and is approximately 9,500 ft (1.8 miles) in length. Near GWMW06, the PCE detections are limited to the UHZ. The area of PCE extending from the DACTD maintenance facility eastward beyond GWMW15 is approximately 6,000 ft (1.1 mi.) in length. The plume, at its widest point, extends north-to-south from north of CLC Well No. 21 to south of CLC Well No. 19 and is approximately 2,700 ft (0.5 mi) wide (see **Figure 1-10**). The plume configuration appears to have been largely shaped by municipal well pumping.

The PCE concentrations in the UHZ (at the water table) still exceed the MCL in two areas (see **Figure 1-10**). The first area is located in the vicinity of monitor well GWMW06 in the northwestern part of the plume. This area is located upgradient of and near the former National Guard Armory. The second area where PCE concentrations exceed the MCL extends from near monitor well MW-SF3 (located at the DACTD maintenance facility) to the east toward monitor well MW-SF10. This second area is much larger in aerial extent than the first area.

In the upper and lower portions of the LHZ, PCE concentrations exceed the MCL in the area extending eastward and downgradient from the DACTD maintenance facility (see **Figures 1-11** and **1-12**). The area of the plume where PCE exceeds the MCL in the lower portion of the LHZ (**Figure 1-12**) occurs at the DACTD maintenance facility near monitor well GWMW01. PCE concentrations in the upper portion of the LHZ (**Figure 1-12**), above an elevation of 3,675 ft MSL, exceed the MCL in a broad area extending from the eastern portion of the DACTD maintenance facility downgradient to the east of monitor well GWMW15-S. The down-gradient (eastern) lateral extent of PCE in the upper portion of the LHZ is not well defined.

The vertical distribution of PCE at the GWP site from December 2005 is presented in cross-section view on **Figures 1-13** through **1-15**. The locations of these cross-sections in relation to the site are shown on **Figure 1-16**. In the northwestern part of the plume, the highest detections of PCE occur in the UHZ at GWMW06 port 1 (10 µg/L, see **Figure 1-13**). The PCE concentration decreases away from this monitor well location. In the LHZ in this area, the PCE concentrations are low (less than 1 µg/L) or not detected. This infers that the concentrations observed at GWMW06 are confined to the upper reaches of the aquifer and do not contribute significantly to the rest of the plume. In the eastern area of the plume, between monitor wells GWMW01 and GWMW15, the PCE contamination extends

REFERENCE 11

PRELIMINARY ASSESSMENT REPORT
Main and Alameda Solvents Site
CERCLIS # NMN000606776
DOÑA ANA COUNTY, NEW MEXICO

March 2008

New Mexico Environment Department
Ground Water Quality Bureau
Superfund Oversight Section

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1.0 Introduction

Under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 United States Code (U.S.C.) §§ 9601 to 9675, the New Mexico Environment Department (NMED) Superfund Oversight Section (SOS) conducted a Preliminary Site Assessment (PA) of the Main and Alameda Solvents Site, Las Cruces, Doña Ana County, New Mexico, CERCLIS ID NMN000606776 (Ref. 1).

The objective of the PA is to evaluate the Site using the Hazard Ranking System (Ref. 1) and the Superfund Chemical Data Matrix (Ref. 2) to determine if a threat to human health and the environment exists such that further action under CERCLA is warranted.

2.0 Site information

2.1 Location and description

The Main and Alameda Solvents Site (Site) is a contaminated groundwater plume with no identified source. The Site is located ~~in downtown~~ Las Cruces, New Mexico and is defined by an area of groundwater contaminated by tetrachloroethene (PCE; perchloroethylene; C_2Cl_4) (CAS # 127-18-4) (Ref. 2, p. 1, 2). PCE was detected commingling with a gasoline plume in monitoring wells installed to investigate the Midtown Chevron leaking underground storage tank (LUST) site (Release ID #3515) (Ref. 4). The address, 750 South Main Street, lies at 32° 18' 12.1" north latitude, 106° 46' 40.7" west longitude. Based on relative contaminant concentrations in various wells, the two plumes appear to have separate sources (Ref. 5). The gasoline plume is bounded by a monitoring well network designed ~~for the purpose of monitoring~~ the gasoline plume, whereas the PCE plume is not (Ref. 5). A sample collected from a temporary well installed in 2004 for a Phase I and limited Phase II Environmental Site Assessment at the Loretto Towne Centre, 505 S. Main Street, also detected PCE (Ref. 6, p. 3).

2.2 Geologic setting

Las Cruces is in the Mesilla Basin, which formed within the normal-faulted, crustal spreading region associated with the Rio Grande Rift. The region is one of marked tectonic relief, including exposure of uplifted Precambrian basement rock exposed nine miles east of Las Cruces in the Organ-Franklin Mountain-Sierra Juarez chain. Beneath the valley, sedimentary basin-fill deposits are saturated down to a maximum thickness of 3,000 feet in the Mesilla Basin (Ref. 7, p. 35). North-trending, en-echelon normal faulting (half-graben structures) of the rift province, many with accommodation-zone terminations, are the dominant tectonic forms of the regional geologic terrane (Ref. 7, p. 33). Within the basin-fill deposits, younger sediments are predominantly alluvial in origin whereas eolian and lacustrin lithofacies are present in older portions of the depositional sequence.

2.3 Climate

The climate of the area is arid because the average annual precipitation in the Mesilla Valley ranges between 8.0 and 9.0 inches per year (Ref. 8). Nearly three-fourths of the annual

REFERENCE 12

NEW MEXICO ENVIRONMENT DEPARTMENT
RECORD OF TELEPHONE CONVERSATION

***Time*:**	***Date*: 02/15/2008**
***Originating Party*: Ruth Horowitz** **New Mexico Environment Department** Ground Water Quality Bureau Superfund Oversight Section	***Other Parties*: Chris Holmes** **New Mexico Environment Department** **Petroleum Storage Tank Bureau**

***Subject*:** North Main Street, Las Cruces, New Mexico

Discussion: There are ongoing remediation efforts at Scotts Auto Sales and North Main Self Serve to clean up the LUST contamination. Clean at Bar-F-22 commenced April 15, 2005. There is ongoing ground water monitoring at Bar-F-22.

Since 1999, no chlorinated solvents have been detected in any ground water samples from monitoring wells at these sites.

Signature: Ruth Horowitz

Date: 2/15/08

REFERENCE 13

Engineers, Geologists, Hygienists and Environmental Scientists

Raba Kistner

Raba Kistner Consultants (SW), Inc.
2141 Hammerand Court, Suite D
Las Cruces, New Mexico 88001
(505) 532-0879 • FAX (505) 532-0881

RECEIVED
MAY 11 1998

Project No. ANF98-002-00
May 4, 1998

New Mexico Environment Department
Underground Storage Tank Bureau
1190 St. Francis Drive
Santa Fe, New Mexico 87502

Attn: Mr. Brian Salem

Re: On-Site Investigation Report
Scott's Auto Sales
1835 North Main Street
Las Cruces, New Mexico
Facility No. 6235006

Dear Mr. Salem:

Attached is the On-Site Investigation Report (Form 1206) for the above-referenced site (Figures 1 and 2). The report includes data generated during field work performed March 26 and 27, 1998. The field work consisted of advancing two borings, three monitoring wells, and analyzing the associated soil and water samples.

The objective of the field work was to identify the horizontal and vertical extent of petroleum hydrocarbon contamination in the soil and the extent of the known dissolved-phase hydrocarbon plume in the groundwater. The work was performed for Sharp Oil Company, Inc. (Client) at the request of the New Mexico Environment Department.

SOIL ASSESSMENT

Raba-Kistner (R-K) installed three monitoring wells and two borings; boring locations are shown on Figure 1. Borings B-4 and B-5 were advanced to a depth of 35 feet below ground surface (ft bgs). The monitoring wells were installed at a total depth of 45 ft bgs. The boring logs are in Appendix 1. Soil cuttings were stored on site pending photo-ionization detector (PID) readings. Soils were continuously sampled. An R-K environmental engineer field-screened the soil samples for the presence of volatile organics, using a portable organic vapor meter utilizing a photo-ionization detector. Based upon field screening results, one soil sample from each boring was selected for submission to the laboratory. The sampling protocol is located in Appendix 4.

Organic vapor concentrations measured for B-4 soil samples were 253 ppm at 5 ft bgs and 312 ppm at 35 ft bgs. Organic vapor concentrations measured for B-5 soil samples were 119 ppm at 25 ft bgs and out of range (>8300 ppm) at 35 ft bgs. The hydrocarbon

c. **USTB Recipient of call:**

3. **7-Day Report**

a. **Date submitted:** N/A

b. **Name and affiliation:**

4. **30-Day Verbal Report**

a. **Date:** N/A

b. **Caller name and affiliation:**

c. **USTB Recipient of call:**

IV. ON-SITE INVESTIGATION:

A. Risk assessment (refer to figures if applicable)

1. Identification of underground utilities: *(Figure 1)*

a. **Is there potential for vapor accumulation or explosion?**

____ *YES* or __X__ *NO*

IF YES, please comment briefly:

b. **Is there potential for preferential migration of the contaminant associated with the utility corridors?**

____ *YES* or __X__ *NO*

IF YES, please comment briefly:

2. Identification of surface water courses within 1/2 mile: *(Figure 2)*

Storm water channel approx. 100 yards northwest of site (typically dry) concentrations in the soils were above NMED remediation requirements, therefore, soil cuttings were not placed back in the borings. The borings were grouted to the surface.

SOIL ANALYTICAL RESULTS

The soil samples were submitted to Assaigai Analytical Laboratories, Inc. for analysis of benzene, toluene, ethylbenzene and total xylenes (BTEX) by EPA Method 8020A, total petroleum hydrocarbons (TPH) by EPA Method 8015 Modified (Gasoline Range Organics), and volatile organic compounds (VOCs) by EPA Method 8260. As reported by the laboratory, concentrations of BTEX, TPH, and VOCs were detected from samples MW-1, MW-2, MW-3, B-4, and B-5. The soil analytical results are summarized in Table 3A and 3B, and the laboratory analytical reports are in Appendix 5. Locations of the monitoring wells and borings with concentrations are on figures 3 and 6.

GROUNDWATER MONITORING & SAMPLING

The ground water elevations for MW-1, MW-2, and MW-3 were measured on April 3, 1998. A summary of the ground water levels measured at the site is in table 5.

Ground water samples were collected from monitor wells MW-1 through MW-3. After monitoring the wells for depth-to-water, each well was purged a minimum of 2 well volumes, except for MW-3 from which only one well volume was purged. The wells were allowed to equilibrate prior to sampling. The water samples were placed in clean laboratory-supplied jars, sealed, and labeled. The samples were then submitted to Trace Analysis, Inc. for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020A, total petroleum hydrocarbons (TPH) by EPA Method 8015 modified, and VOCs by EPA method 8260.

GROUNDWATER ANALYTICAL RESULTS

Samples collected from monitoring wells MW-1, MW-2, and MW-3 were reported to have BTEX and TPH concentrations above detectable limits. Analytical results are summarized in Table 4A, and the laboratory analytical reports are in Appendix 5.

Table 2
Summary of Vapor Testing Results
Scott's Auto Sales
1835 N. Main
Las Cruces, New Mexico
ANF98-002-00

DEPTH FEET	MW-1	MW-2	MW-3	B-4	B-5
	Photo-Ionization Detector (PID) READING (ppm)				
5' - 7'	0	320	3	253	4
10' - 12'	0	22	2	22	7
15' - 17'	0	14	2	15	50
20' - 22'	0	31	0	4	54
25' - 27'	8	7	0	6	119
30' - 32'	0	3	1	7	67
35' - 37'	861	*4500	8		
40' - 42'	*4300	45	N/S		

* PID reading out of range.
N/S = No Sample (0% recovered in split sample)

5

ASSAIGAI ANALYTICAL LABORATORIES, INC.

7300 Jefferson, N.E. • Albuquerque, New Mexico 87109 • (505) 345-8964 • FAX (505) 345-7259
3332 Wedgewood, E-5 • El Paso, Texas 79925 • (915) 593-6000 • FAX (915) 593-7820

RABA-KISTNER CONSULTANTS (SW)
attn: JIM WILLIAMS
7002 COMMERCE
EL PASO, TEXAS 79915

* explanation of codes	
B	analyte detected in Method Blank
E	result is estimated
H	analyzed out of hold time
N	tentatively identified compound
S	subcontracted
1-9	see footnote

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: RABA-KISTNER CONSULTANTS (SW)
Project: 9803272 ANF9800200 SCOTT'S AUTO SALES

William P. Biava, President of Assaigai Analytical Laboratories, Inc.

Client Sample ID: **MW-1 40'-42'** Sample Matrix: **SOIL** Sample Collected: 03/26/98 14:35:00

Fraction	QC Group	CAS #		Result	Units	Dilution Factor	Detection Limit	*	Sequence	Run Date
			SW846-8015 Modified TPH							
9803272-01A	X98179	•	Gasoline Range Organics	74	mg / Kg	27.9018	0.26		XG.1998.315-8	04/03/98
			SW846-8020 Volatiles							
9803272-01A	X98185	71-43-2	Benzene	0.27	mg / Kg	5.5804	0.005		XG.1998.310-8	04/07/98
	X98185	100-41-4	Ethylbenzene	0.76	mg / Kg	5.5804	0.005		XG.1998.310-8	
	X98185	95-47-6	o-Xylene	0.93	mg / Kg	5.5804	0.005		XG.1998.310-8	
	X98185		p/m Xylenes	2.1	mg / Kg	5.5804	0.01		XG.1998.310-8	
	X98185	108-88-3	Toluene	0.81	mg / Kg	5.5804	0.005		XG.1998.310-8	
			SW846-8260 Volatiles							
9803272-01A	X98191	75-34-3	1,1 Dichloroethane	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	04/09/98
	X98191	75-35-4	1,1 Dichloroethene	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	79-34-5	1,1,2,2 Tetrachloroethane	0.047	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	95-50-1	1,2 Dichlorobenzene	0.030	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	107-06-2	1,2 Dichloroethane	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	78-87-5	1,2 Dichloropropane	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	95-63-6	1,2,4-Trimethylbenzene	2.8	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg	5.3648	0.005		XG.1998.334-4	
	X98191	108-67-8	1,3,5-Trimethylbenzene	0.89	mg / Kg	5.3648	0.005		XG.1998.334-4	

6

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: RABA-KISTNER CONSULTANTS (SW)

Project: 9803272 ANF9800200 SCOTT'S AUTO SALES

9803272-01A	X98191	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg	5.3648	0.05	XG.1998.334-4	04/09/98
	X98191	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	78-93-3	2-Butanone (MEK)	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	110-75-8	2-Chloroethylvinylether	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	591-78-6	2-Hexanone (MBK)	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	67-64-1	Acetone	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	107-02-8	Acrolein	ND	mg / Kg	5.3648	0.1	XG.1998.334-4	
	X98191	107-13-1	Acrylonitrile	ND	mg / Kg	5.3648	0.1	XG.1998.334-4	
	X98191	71-43-2	Benzene	0.24	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	75-27-4	Bromodichloromethane	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	75-25-2	Bromoform	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	74-83-9	Bromomethane	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	75-15-0	Carbon disulfide	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	56-23-5	Carbon tetrachloride	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	108-90-7	Chlorobenzene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	124-48-1	Chlorodibromomethane	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	75-00-3	Chloroethane	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	67-66-3	Chloroform	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	74-87-3	Chloromethane	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	10061-01-5	cis-1,3 dichloropropene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	74-95-3	Dibromomethane	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	97-63-2	Ethyl methacrylate	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	100-41-4	Ethylbenzene	1.0	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191		Freon 113	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	75-71-8	Freon 12	ND	mg / Kg	5.3648	0.05	XG.1998.334-4	
	X98191	74-88-4	Iodomethane	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	75-09-2	Methylene chloride	ND	mg / Kg	5.3648	0.05	XG.1998.334-4	
	X98191	95-47-6	o-Xylene	1.4	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191		p/m Xylenes	3.3	mg / Kg	5.3648	0.01	XG.1998.334-4	
	X98191	100-42-5	Styrene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	127-18-4	Tetrachloroethene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	108-88-3	Toluene	1.1	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	79-01-6	Trichloroethene	ND	mg / Kg	5.3648	0.005	XG.1998.334-4	
	X98191	75-69-4	Trichlorofluoromethane	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	108-05-4	Vinyl acetate	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	
	X98191	75-01-4	Vinyl chloride	ND	mg / Kg	5.3648	0.025	XG.1998.334-4	

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Certificate of Analysis

Client: RABA-KISTNER CONSULTANTS (SW)

Project: 9803272 ANF9800200 SCOTT'S AUTO SALES

Client Sample ID: *B-4 35'-37'*

Sample Matrix: SOIL

Sample Collected: 03/27/98 08:29:00

Fraction	QC Group	CAS #		Result	Units	Dilution Factor	Detection Limit	*	Sequence	Run Date
			SW846-8015 Modified TPH							
9803272-02A	X98179		Gasoline Range Organics	7200	mg / Kg	2985.0748	0.25		XG.1998.315-9	04/03/98
			SW846-8020 Volatiles							
9803272-02A	X98185	71-43-2	Benzene	ND	mg / Kg	7462.6866	0.005		XG.1998.310-9	04/07/98
	X98185	100-41-4	Ethylbenzene	ND	mg / Kg	7462.6866	0.005		XG.1998.310-9	
	X98185	95-47-6	o-Xylene	ND	mg / Kg	7462.6866	0.005		XG.1998.310-9	
	X98185		p/m Xylenes	ND	mg / Kg	7462.6866	0.01		XG.1998.310-9	
	X98185	108-88-3	Toluene	ND	mg / Kg	7462.6866	0.005		XG.1998.310-9	
			SW846-8260 Volatiles							
98032[illegible]	X98191	75-34-3	1,1 Dichloroethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	04/09/98
	X98191	75-35-4	1,1 Dichloroethene	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	79-34-5	1,1,2,2 Tetrachloroethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	95-50-1	1,2 Dichlorobenzene	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	107-06-2	1,2 Dichloroethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	78-87-5	1,2 Dichloropropane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	95-63-6	1,2,4-Trimethylbenzene	190	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	108-67-8	1,3,5-Trimethylbenzene	100	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg	298.5075	0.05		XG.1998.334-5	
	X98191	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	78-93-3	2-Butanone (MEK)	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	
	X98191	110-75-8	2-Chloroethylvinylether	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	
	X98191	591-78-6	2-Hexanone (MBK)	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	
	X98191	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	
	X98191	67-64-1	Acetone	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	
	X98191	107-02-8	Acrolein	ND	mg / Kg	298.5075	0.1		XG.1998.334-5	
	X98191	107-13-1	Acrylonitrile	ND	mg / Kg	298.5075	0.1		XG.1998.334-5	
	X98191	71-43-2	Benzene	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	75-27-4	Bromodichloromethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	75-25-2	Bromoform	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	74-83-9	Bromomethane	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	
	X98191	75-15-0	Carbon disulfide	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	
	X98191	56-23-5	Carbon tetrachloride	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	108-90-7	Chlorobenzene	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	124-48-1	Chlorodibromomethane	ND	mg / Kg	298.5075	0.005		XG.1998.334-5	
	X98191	75-00-3	Chloroethane	ND	mg / Kg	298.5075	0.025		XG.1998.334-5	

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Client: **RABA-KISTNER CONSULTANTS (SW)**

Project: **9803272 ANF9800200 SCOTT'S AUTO SALES**

9803272-02A	X98191	67-66-3	Chloroform	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	04/09/98
	X98191	74-87-3	Chloromethane	ND	mg / Kg	298.5075	0.025	XG.1998.334-5	
	X98191	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	10061-01-5	cis-1,3 dichloropropene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	74-95-3	Dibromomethane	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	97-63-2	Ethyl methacrylate	ND	mg / Kg	298.5075	0.020	XG.1998.334-5	
	X98191	100-41-4	Ethylbenzene	25	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191		Freon 113	ND	mg / Kg	298.5075	0.025	XG.1998.334-5	
	X98191	75-71-8	Freon 12	ND	mg / Kg	298.5075	0.05	XG.1998.334-5	
	X98191	74-88-4	Iodomethane	ND	mg / Kg	298.5075	0.025	XG.1998.334-5	
	X98191	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	75-09-2	Methylene chloride	ND	mg / Kg	298.5075	0.05	XG.1998.334-5	
	X98191	95-47-6	o-Xylene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191		p/m Xylenes	ND	mg / Kg	298.5075	0.01	XG.1998.334-5	
	X98191	100-42-5	Styrene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	127-18-4	Tetrachloroethene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	108-88-3	Toluene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	79-01-6	Trichloroethene	ND	mg / Kg	298.5075	0.005	XG.1998.334-5	
	X98191	75-69-4	Trichlorofluoromethane	ND	mg / Kg	298.5075	0.025	XG.1998.334-5	
	X98191	108-05-4	Vinyl acetate	ND	mg / Kg	298.5075	0.025	XG.1998.334-5	
	X98191	75-01-4	Vinyl chloride	ND	mg / Kg	298.5075	0.025	XG.1998.334-5	

Client Sample ID: ***B-5 35'-37'*** Sample Matrix: **SOIL** Sample Collected: *03/27/98 10:22:00*

Fraction	QC Group	CAS #		Result	Units	Dilution Factor	Detection Limit	*	Sequence	Run Date
			SW846-8015 Modified TPH							
9803272-03A	X98179		Gasoline Range Organics	1900	mg / Kg	824.4023	0.25		XG.1998.316-10	04/03/98
			SW846-8020 Volatiles							
9803272-03A	X98185	71-43-2	Benzene	4.2	mg / Kg	412.2012	0.005		XG.1998.310-11	04/07/98
	X98185	100-41-4	Ethylbenzene	35	mg / Kg	412.2012	0.005		XG.1998.310-11	
	X98185	95-47-6	o-Xylene	44	mg / Kg	412.2012	0.005		XG.1998.310-11	
	X98185		p/m Xylenes	110	mg / Kg	412.2012	0.01		XG.1998.310-11	
	X98185	108-88-3	Toluene	40	mg / Kg	412.2012	0.005		XG.1998.310-11	
			SW846-8260 Volatiles							
9803272-03A	X98191	75-34-3	1,1 Dichloroethane	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	04/09/98
	X98191	75-35-4	1,1 Dichloroethene	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	
	X98191	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	
	X98191	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	
	X98191	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	
	X98191	79-34-5	1,1,2,2 Tetrachloroethane	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	
	X98191	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	
	X98191	95-50-1	1,2 Dichlorobenzene	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	
	X98191	107-06-2	1,2 Dichloroethane	ND	mg / Kg	87.9044	0.005		XG.1998.334-6	

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Certificate of Analysis

Client: **RABA-KISTNER CONSULTANTS (SW)**
Project: **9803272 ANF9800200 SCOTT'S AUTO SALES**

9803272-03A	X98191	78-87-5	1,2 Dichloropropane	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	04/09/98
	X98191	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	95-63-6	1,2,4-Trimethylbenzene	160	mg / Kg	351.6174	0.005	XG.1998.334-13	04/10/98
	X98191	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	04/09/98
	X98191	108-67-8	1,3,5-Trimethylbenzene	43	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg	87.9044	0.05	XG.1998.334-6	
	X98191	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	78-93-3	2-Butanone (MEK)	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	110-75-8	2-Chloroethylvinylether	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	591-78-6	2-Hexanone (MBK)	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	67-64-1	Acetone	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	107-02-8	Acrolein	ND	mg / Kg	87.9044	0.1	XG.1998.334-6	
	X98191	107-13-1	Acrylonitrile	ND	mg / Kg	87.9044	0.1	XG.1998.334-6	
	X98191	71-43-2	Benzene	3.5	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	75-27-4	Bromodichloromethane	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	75-25-2	Bromoform	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	74-83-9	Bromomethane	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	75-15-0	Carbon disulfide	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	56-23-5	Carbon tetrachloride	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	108-90-7	Chlorobenzene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	124-48-1	Chlorodibromomethane	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	75-00-3	Chloroethane	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	67-66-3	Chloroform	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	74-87-3	Chloromethane	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	10061-01-5	cis-1,3 dichloropropene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	74-95-3	Dibromomethane	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	97-63-2	Ethyl methacrylate	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	100-41-4	Ethylbenzene	56	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191		Freon 113	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	75-71-8	Freon 12	ND	mg / Kg	87.9044	0.05	XG.1998.334-6	
	X98191	74-88-4	Iodomethane	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	75-09-2	Methylene chloride	ND	mg / Kg	87.9044	0.05	XG.1998.334-6	
	X98191	95-47-6	o-Xylene	73	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191		p/m Xylenes	170	mg / Kg	87.9044	0.01	XG.1998.334-6	
	X98191	100-42-5	Styrene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	127-18-4	Tetrachloroethene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	108-88-3	Toluene	73	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	79-01-6	Trichloroethene	ND	mg / Kg	87.9044	0.005	XG.1998.334-6	
	X98191	75-69-4	Trichlorofluoromethane	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	108-05-4	Vinyl acetate	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	
	X98191	75-01-4	Vinyl chloride	ND	mg / Kg	87.9044	0.025	XG.1998.334-6	

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: RABA-KISTNER CONSULTANTS (SW)

Project: 9803272 ANF9800200 SCOTT'S AUTO SALES

Client Sample ID: MW-2 35'-37'

Sample Matrix: SOIL

Sample Collected: 03/27/98 11:55:00

Fraction	QC Group	CAS #		Result	Units	Dilution Factor	Detection Limit	Sequence	Run Date
			SW846-8015 Modified TPH						
9803272-04A	X98179		Gasoline Range Organics	280	mg / Kg	187.5603	0.25	XG.1998.315-11	04/03/98
			SW846-8020 Volatiles						
9803272-04A	X98185	71-43-2	Benzene	ND	mg / Kg	335.1206	0.005	XG.1998.310-10	04/07/98
	X98185	100-41-4	Ethylbenzene	8.0	mg / Kg	335.1206	0.005	XG.1998.310-10	
	X98185	95-47-6	o-Xylene	6.4	mg / Kg	335.1206	0.005	XG.1998.310-10	
	X98185		p/m Xylenes	4.1	mg / Kg	335.1206	0.01	XG.1998.310-10	
	X98185	108-88-3	Toluene	ND	mg / Kg	335.1206	0.005	XG.1998.310-10	
			SW846-8260 Volatiles						
9803272-04A	X98191	75-34-3	1,1 Dichloroethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	04/09/98
	X98191	75-35-4	1,1 Dichloroethene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	79-34-5	1,1,2,2 Tetrachloroethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	95-50-1	1,2 Dichlorobenzene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	107-06-2	1,2 Dichloroethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	78-87-5	1,2 Dichloropropane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	95-63-6	1,2,4-Trimethylbenzene	8.2	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	108-67-8	1,3,5-Trimethylbenzene	3.4	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg	8.9928	0.05	XG.1998.334-7	
	X98191	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	78-93-3	2-Butanone (MEK)	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	110-75-8	2-Chloroethylvinylether	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	591-78-6	2-Hexanone (MBK)	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg	8.9928	0.025	XG.1998.337-1	
	X98191	67-64-1	Acetone	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	107-02-8	Acrolein	ND	mg / Kg	8.9928	0.1	XG.1998.334-7	
	X98191	107-13-1	Acrylonitrile	ND	mg / Kg	8.9928	0.1	XG.1998.334-7	
	X98191	71-43-2	Benzene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	75-27-4	Bromodichloromethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	75-25-2	Bromoform	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	74-83-9	Bromomethane	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	75-15-0	Carbon disulfide	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	56-23-5	Carbon tetrachloride	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	108-90-7	Chlorobenzene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	124-48-1	Chlorodibromomethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	75-00-3	Chloroethane	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	

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Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: **RABA-KISTNER CONSULTANTS (SW)**
Project: **9803272 ANF9800200 SCOTT'S AUTO SALES**

9803272-04A	X98191	67-66-3	Chloroform	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	04/09/98
	X98191	74-87-3	Chloromethane	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	10061-01-5	cis-1,3 dichloropropene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	74-95-3	Dibromomethane	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	97-63-2	Ethyl methacrylate	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	100-41-4	Ethylbenzene	5.4	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191		Freon 113	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	75-71-8	Freon 12	ND	mg / Kg	8.9928	0.05	XG.1998.334-7	
	X98191	74-88-4	Iodomethane	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	75-09-2	Methylene chloride	ND	mg / Kg	8.9928	0.05	XG.1998.334-7	
	X98191	95-47-6	o-Xylene	4.5	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191		p/m Xylenes	2.3	mg / Kg	8.9928	0.01	XG.1998.334-7	
	X98191	100-42-5	Styrene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	127-18-4	Tetrachloroethene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	108-88-3	Toluene	0.21	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	79-01-6	Trichloroethene	ND	mg / Kg	8.9928	0.005	XG.1998.334-7	
	X98191	75-69-4	Trichlorofluoromethane	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	108-05-4	Vinyl acetate	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	
	X98191	75-01-4	Vinyl chloride	ND	mg / Kg	8.9928	0.025	XG.1998.334-7	

Client Sample ID **MW-3 35'-37'** Sample Matrix **SOIL** Sample Collected 03/27/98 15:32:00

Fraction	QC Group	CAS #		Result	Units	Dilution Factor	Detection Limit	Sequence	Run Date
			SW846-8015 Modified TPH						
9803272-05A	X98179		Gasoline Range Organics	ND	mg / Kg	5.6211	0.25	XG.1998.315-7	04/03/98
			SW846-8020 Volatiles						
9803272-05A	X98185	71-43-2	Benzene	ND	mg / Kg	5.6211	0.005	XG.1998.310-7	04/07/98
	X98185	100-41-4	Ethylbenzene	0.082	mg / Kg	5.6211	0.005	XG.1998.310-7	
	X98185	95-47-6	o-Xylene	ND	mg / Kg	5.6211	0.005	XG.1998.310-7	
	X98185		p/m Xylenes	ND	mg / Kg	5.6211	0.01	XG.1998.310-7	
	X98185	108-88-3	Toluene	ND	mg / Kg	5.6211	0.005	XG.1998.310-7	
			SW846-8260 Volatiles						
9803272-05A	X98191	75-34-3	1,1 Dichloroethane	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	04/09/98
	X98191	75-35-4	1,1 Dichloroethene	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	
	X98191	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	
	X98191	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	
	X98191	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	
	X98191	79-34-5	1,1,2,2 Tetrachloroethane	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	
	X98191	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	
	X98191	95-50-1	1,2 Dichlorobenzene	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	
	X98191	107-06-2	1,2 Dichloroethane	ND	mg / Kg	6.5617	0.005	XG.1998.334-8	

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Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: RABA-KISTNER CONSULTANTS (SW)

Project: 9803272 ANF9800200 SCOTT'S AUTO SALES

9803272-05A	X98191	78-87-5	1,2 Dichloropropane	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	04/09/98
	X98191	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	95-63-6	1,2,4-Trimethylbenzene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	108-67-8	1,3,5-Trimethylbenzene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg	6.5617	0.05		XG.1998.334-8	
	X98191	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	78-93-3	2-Butanone (MEK)	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	110-75-8	2-Chloroethylvinylether	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	591-78-6	2-Hexanone (MBK)	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	67-64-1	Acetone	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	107-02-8	Acrolein	ND	mg / Kg	6.5617	0.1		XG.1998.334-8	
	X98191	107-13-1	Acrylonitrile	ND	mg / Kg	6.5617	0.1		XG.1998.334-8	
	X98191	71-43-2	Benzene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	75-27-4	Bromodichloromethane	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	75-25-2	Bromoform	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	74-83-9	Bromomethane	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	75-15-0	Carbon disulfide	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	56-23-5	Carbon tetrachloride	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	108-90-7	Chlorobenzene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	124-48-1	Chlorodibromomethane	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	75-00-3	Chloroethane	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	67-66-3	Chloroform	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	74-87-3	Chloromethane	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	10061-01-5	cis-1,3 dichloropropene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	74-95-3	Dibromomethane	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	97-63-2	Ethyl methacrylate	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	100-41-4	Ethylbenzene	0.14	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191		Freon 113	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	75-71-8	Freon 12	ND	mg / Kg	6.5617	0.05		XG.1998.334-8	
	X98191	74-88-4	Iodomethane	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	75-09-2	Methylene chloride	ND	mg / Kg	6.5617	0.05		XG.1998.334-8	
	X98191	95-47-6	o-Xylene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191		p/m Xylenes	ND	mg / Kg	6.5617	0.01		XG.1998.334-8	
	X98191	100-42-5	Styrene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	127-18-4	Tetrachloroethene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	108-88-3	Toluene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	79-01-6	Trichloroethene	ND	mg / Kg	6.5617	0.005		XG.1998.334-8	
	X98191	75-69-4	Trichlorofluoromethane	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	108-05-4	Vinyl acetate	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	
	X98191	75-01-4	Vinyl chloride	ND	mg / Kg	6.5617	0.025		XG.1998.334-8	

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TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
RABA KISTNER CONSULTANTS
Attention: Jim Williams
7002 Commerce
El Paso, TX 79915

April 16, 1998
Receiving Date: 04/03/98
Sample Type: Water
Project No: ANF98-002-00
Project Location: Las Cruces

Prep Date: 04/08/98
Analysis Date: 04/08/98
Sampling Date: 04/03/98
Sample Condition: Intact & Cool
Sample Received by: MT
Project Name: Scott's Auto Sales

TA #: T95352/981282
FIELD CODE: MW-1

8260 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	EA	IA
Dichlorodifluoromethane	100	ND				
Chloromethane	100	ND				
Vinyl chloride	200	ND	112			112
Bromomethane	500	ND				
Chloroethane	100	ND				
Trichlorofluoromethane	100	ND				
1,1-Dichloroethene	100	ND	117	3	116	117
Methylene chloride	500	ND				
trans-1,2-Dichloroethene	100	ND				
1,1-Dichloroethane	100	ND				
cis-1,2-Dichloroethene	100	ND				
Chloroform	100	ND	106			106
2,2-Dichloropropane	100	ND				
Bromochloromethane	100	ND				
1,2-Dichloroethane EDC	100	390				
1,1,1-Trichloroethane	100	ND				
Carbon Tetrachloride	100	ND				
1,1-Dichloropropene	100	ND				
Benzene	100	19,000		3	116	
1,2-Dichloropropane	100	ND	107			107
Trichloroethene	100	ND		3	118	
Dibromomethane	100	ND				
Bromodichloromethane	100	ND				
cis-1,3-Dichloropropene	100	ND				
trans-1,3-Dichloropropene	100	ND				
Toluene	100	17,000	112	2	118	112
1,1,2-Trichloroethane	100	ND				
1,3-Dichloropropane	100	ND				
MTBE	100	ND				

RABA KISTNER CONSULTANTS
Project No.: ANF98-002-00
Project Location: Las Cruces
Project Name: Scott's Auto Sales

TA #: T95352/981282
Field Code: MW-1

8260 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	EA	IA
Dibromochloromethane	100	ND				
1,2-Dibromoethane	100	ND				
Tetrachloroethene	100	ND				
Chlorobenzene	100	ND	113	1	120	113
1,1,1,2-Tertachloroethane	100	ND				
Ethylbenzene	100	4,000	120			120
m & p-Xylene	100	11,000				
Bromoform	100	ND				
Styrene	100	200				
o-Xylene	100	6,100				
1,1,2,2-Tetrachloroethane	100	ND				
1,2,3-Trichloropropane	100	ND				
Isopropylbenzene	100	190				
Bromobenzene	100	ND				
2-Chlorotoluene	100	ND				
n-Propylbenzene	100	510				
4-Chlorotoluene	100	ND				
1,3,5-Trimethylbenzene	100	820				
tert-Butylbenzene	100	ND				
1,2,4-Trimethylbenzene	100	3,200				
1,4-Dichlorobenzene	200	ND				
sec-Butylbenzene	100	ND				
1,3-Dichlorobenzene	200	ND				
4-Isopropyltoluene	100	ND				
1,2-Dichlorobenzene	200	ND				
n-Butylbenzene	100	ND				
1,2-Dibromo-3-chloropropane	500	ND				
1,2,3-Trichlorobenzene	500	ND				
Naphthalene	100	1,100				
1,2,4-Trichlorobenzene	500	ND				
Hexachlorobutadiene	500	ND				

	% Recovery
Dibromofluoromethane	111
Toluene-d8	112
4-Bromofluorobenzene	110

ND = Not Detected

Methods: EPA SW 846-5030, 8260.
CHEMIST: AG

Director, Dr. Blair Leftwich

4-17-98
Date

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TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
RABA KISTNER CONSULTANTS
Attention: Jim Williams
7002 Commerce
El Paso, TX 79915

April 16, 1998
Receiving Date: 04/03/98
Sample Type: Water
Project No: ANF98-002-00
Project Location: Las Cruces

Prep Date: 04/08/98
Analysis Date: 04/08/98
Sampling Date: 04/03/98
Sample Condition: Intact & Cool
Sample Received by: MT
Project Name: Scott's Auto Sales

TA #: T95353/981283
FIELD CODE: MW-2

8260 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	EA	IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND				
Vinyl chloride	100	ND	112			112
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	117	3	116	117
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND				
cis-1,2-Dichloroethene	50	ND				
Chloroform	50	ND	106			106
2,2-Dichloropropane	50	ND				
Bromochloromethane	50	ND				
1,2-Dichloroethane	50	ND				
1,1,1-Trichloroethane	50	ND				
Carbon Tetrachloride	50	ND				
1,1-Dichloropropene	50	ND				
Benzene	50	180		3	116	
1,2-Dichloropropane	50	ND	107			107
Trichloroethene	50	ND		3	118	
Dibromomethane	50	ND				
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	1,700	112	2	118	112
1,1,2-Trichloroethane	50	ND				
1,3-Dichloropropane	50	ND				
MTBE	50	ND				

RABA KISTNER CONSULTANTS

Project No.: ANF98-002-00

Project Location: Las Cruces

Project Name: Scott's Auto Sales

TA #: T95353/981283

Field Code: MW-2

8260 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	EA	IA
Dibromochloromethane	50	ND				
1,2-Dibromoethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	113	1	120	113
1,1,1,2-Tertachloroethane	50	ND				
Ethylbenzene	50	5,100	120			120
m & p-Xylene	50	3,400				
Bromoform	50	ND				
Styrene	50	140				
o-Xylene	50	5,400				
1,1,2,2-Tetrachloroethane	50	ND				
1,2,3-Trichloropropane	50	ND				
Isopropylbenzene	50	250				
Bromobenzene	50	ND				
2-Chlorotoluene	50	92	Not CERCLA HAZ			
n-Propylbenzene	50	640				
4-Chlorotoluene	50	ND				
1,3,5-Trimethylbenzene	50	820				
tert-Butylbenzene	50	ND				
1,2,4-Trimethylbenzene	50	2,900				
1,4-Dichlorobenzene	100	ND				
sec-Butylbenzene	50	ND				
1,3-Dichlorobenzene	100	ND				
4-Isopropyltoluene	50	390				
1,2-Dichlorobenzene	100	ND				
n-Butylbenzene	50	ND				
1,2-Dibromo-3-chloropropane	250	ND				
1,2,3-Trichlorobenzene	250	ND				
Naphthalene	50	1,200				
1,2,4-Trichlorobenzene	250	ND				
Hexachlorobutadiene	250	ND				

	% Recovery
Dibromofluoromethane	113
Toluene-d8	111
4-Bromofluorobenzene	112

ND = Not Detected

Methods: EPA SW 846-5030, 8260.
CHEMIST: AG

Director, Dr. Blair Leftwich

4-16-98
Date

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TRACEANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
RABA KISTNER CONSULTANTS
Attention: Jim Williams
7002 Commerce
El Paso, TX 79915

April 16, 1998
Receiving Date: 04/03/98
Sample Type: Water
Project No: ANF98-002-00
Project Location: Las Cruces

Prep Date: 04/08/98
Analysis Date: 04/08/98
Sampling Date: 04/03/98
Sample Condition: Intact & Cool
Sample Received by: MT
Project Name: Scott's Auto Sales

TA #: T95354/981284
FIELD CODE: MW-3

8260 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	EA	IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND				
Vinyl chloride	100	ND	112			112
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	117	3	116	117
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND				
cis-1,2-Dichloroethene	50	ND				
Chloroform	50	ND	106			106
2,2-Dichloropropane	50	ND				
Bromochloromethane	50	ND				
1,2-Dichloroethane	50	ND				
1,1,1-Trichloroethane	50	ND				
Carbon Tetrachloride	50	ND				
1,1-Dichloropropene	50	ND				
Benzene	50	64		3	116	
1,2-Dichloropropane	50	ND	107			107
Trichloroethene	50	ND		3	118	
Dibromomethane	50	ND				
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	112	2	118	112
1,1,2-Trichloroethane	50	ND				
1,3-Dichloropropane	50	ND				
MTBE	50	ND				

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RABA KISTNER CONSULTANTS

Project No.: ANF98-002-00
Project Location: Las Cruces
Project Name: Scott's Auto Sales

TA #: T95354/981284
Field Code: MW-3

8260 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	EA	IA
Dibromochloromethane	50	ND				
1,2-Dibromoethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	113	1	120	113
1,1,1,2-Tertachloroethane	50	ND				
Ethylbenzene	50	1,700	120			120
m & p-Xylene	50	310				
Bromoform	50	ND				
Styrene	50	ND				
o-Xylene	50	660				
1,1,2,2-Tetrachloroethane	50	ND				
1,2,3-Trichloropropane	50	ND				
Isopropylbenzene	50	240				
Bromobenzene	50	ND				
x 2-Chlorotoluene	50	100 Not CERCLA HAZ				
n-Propylbenzene	50	700				
4-Chlorotoluene	50	ND				
1,3,5-Trimethylbenzene	50	900				
tert-Butylbenzene	50	460				
1,2,4-Trimethylbenzene	50	3,500				
1,4-Dichlorobenzene	100	ND				
sec-Butylbenzene	50	58				
1,3-Dichlorobenzene	100	ND				
4-Isopropyltoluene	50	ND				
1,2-Dichlorobenzene	100	ND				
n-Butylbenzene	50	ND				
1,2-Dibromo-3-chloropropane	250	ND				
1,2,3-Trichlorobenzene	250	ND				
Naphthalene	50	1,000				
1,2,4-Trichlorobenzene	250	ND				
Hexachlorobutadiene	250	ND				

	% Recovery
Dibromofluoromethane	110
Toluene-d8	112
4-Bromofluorobenzene	111

ND = Not Detected

Methods: EPA SW 846-5030, 8260.
CHEMIST: AG

BB

Director, Dr. Blair Leftwich

4-16-98

Date

REFERENCE 14

Hall Environmental Analysis Laboratory

Client:	Billings & Assoc., Inc.	**Date Collected:**	NA
Project:	Bar-F #22	**Date Received:**	NA
Project Manager:	Brad Billings	**Sample Matrix:**	Aqueous
Project Number:	#22	**Extraction Date:**	NA

EPA Method - 8260 (page 1)

Units PPB (ug/L)

	Client ID:	**Trip Blank**	-
	HEAL#:	9904014-7	Reagent Blank
	Analysis Date:	4/7/99	4/6/99
Compound	MDL	Result	Result
Benzene	1.0	ND	ND
Bromobenzene	1.0	ND	ND
Bromochloromethane	1.0	ND	ND
Bromodichloromethane	1.0	ND	ND
Bromoform	1.0	ND	ND
Bromomethane	1.0	ND	ND
n-Butylbenzene	1.0	ND	ND
sec-Butylbenzene	1.0	ND	ND
tert-Butylbenzene	1.0	ND	ND
Carbon Tetracholride	1.0	ND	ND
Chlorobenzene	1.0	ND	ND
Chloroethane	2.0	ND	ND
Chloroform	1.0	ND	ND
Chloromethane	1.0	ND	ND
2-Chlorotoluene	1.0	ND	ND
4-Chlorotoluene	1.0	ND	ND
Dibromochloromethane	1.0	ND	ND
1,2-Dibromo-3-chloropropane	2.0	ND	ND
1,2-Dibromoethane (EDB)	1.0	ND	ND
Dibromomethane	2.0	ND	ND
1,2-Dichlorobenzene	1.0	ND	ND
1,3-Dichlorobenzene	1.0	ND	ND
1,4-Dichlorobenzene	1.0	ND	ND
Dichlorodifluoromethane	1.0	ND	ND
1,1-Dichloroethane	1.0	ND	ND
1,2-Dichloroethane	1.0	ND	ND
1,1-Dichloroethene	1.0	ND	ND
1,2-Dichloroethene (Cis)	1.0	ND	ND
1,2-Dichloroethene (Trans)	1.0	ND	ND
Dichloromethane	3.0	ND	ND
1,2-Dichloropropane	1.0	ND	ND
1,3-Dichloropropane	1.0	ND	ND
2,2-Dichloropropane	1.0	ND	ND
1,1-Dichloropropene	1.0	ND	ND
cis-1,3-Dichloropropene	1.0	ND	ND

(Continued)

EPA Method - 8260 (page 2)

	Client ID:	**Trip Blank**	-
	HEAL#:	9904014-7	Reagent Blank
	Analysis Date:	4/7/99	4/6/99
Compound	MDL	Result	Result
trans-1,3-Dichloropropene	1.0	ND	ND
Ethylbenzene	1.0	ND	ND
Hexachlorobutadiene	1.0	ND	ND
Isopropylbenzene	1.0	ND	ND
4-Isopropyltoluene	1.0	ND	ND
Naphthalene	2.0	ND	ND
n-propylbenzene	1.0	ND	ND
Styrene	1.0	ND	ND
1,1,1,2-Tetrachloroethane	1.0	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND
Tetrachloroethene (PCE)	1.0	ND	ND
Toluene	1.0	ND	ND
1,2,3-Trichlorobenzene	1.0	ND	ND
1,2,4-Trichlorobenzene	1.0	ND	ND
1,1,1-Trichloroethane	1.0	ND	ND
1,1,2-Trichloroethane	1.0	ND	ND
Trichloroethene (TCE)	1.0	ND	ND
Trichlorofluoromethane	1.0	ND	ND
1,2,3-Trichloropropane	2.0	ND	ND
1,2,4-Trimethylbenzene	1.0	ND	ND
1,3,5-Trimethylbenzene	1.0	ND	ND
Vinyl Chloride	2.0	ND	ND
Xylenes (Total)	1.0	ND	ND
MTBE	1.0	ND	ND
Surrogates:			
DBFM Recovery		91%	91%
1,2-DCA-d4 Recovery		114%	92%
d8-Toluene Recovery		100%	97%
BFB Recovery		91%	95%
Dilution		1	1

Hall Environmental Analysis Laboratory

Client:	Billings & Assoc., Inc.	**Date Collected:**	4/2/99
Project:	Bar-F #22	**Date Received:**	4/2/99
Project Manager:	Brad Billings	**Sample Matrix:**	Aqueous
Project Number:	#22	**Extraction Date:**	NA

EPA Method - 8260 (page 1)

Units PPB (ug/L)

	Client ID:	**BF22-1**	**BF22-2**	**BF22-3**
	HEAL#:	9904014-1	9904014-2	9904014-3
	Analysis Date:	4/6/99	4/6/99	4/6/99
Compound	MDL	Result	Result	Result
✓Benzene	1.0	ND	ND	**19**
Bromobenzene	1.0	ND	ND	ND
Bromochloromethane	1.0	ND	ND	ND
Bromodichloromethane	1.0	ND	ND	ND
Bromoform	1.0	ND	ND	ND
Bromomethane	1.0	ND	ND	ND
n-Butylbenzene	1.0	ND	**2.2**	ND
sec-Butylbenzene	1.0	ND	**6.6**	**8.6**
tert-Butylbenzene	1.0	ND	ND	ND
Carbon Tetracholride	1.0	ND	ND	ND
Chlorobenzene	1.0	ND	ND	ND
Chloroethane	2.0	ND	ND	ND
Chloroform	1.0	ND	ND	ND
Chloromethane	1.0	ND	ND	ND
2-Chlorotoluene	1.0	ND	ND	ND
4-Chlorotoluene	1.0	ND	ND	ND
Dibromochloromethane	1.0	ND	ND	ND
1,2-Dibromo-3-chloropropane	2.0	ND	ND	ND
✓1,2-Dibromoethane (EDB)	1.0	ND	ND	**1.1**
Dibromomethane	2.0	ND	ND	ND
1,2-Dichlorobenzene	1.0	ND	ND	ND
1,3-Dichlorobenzene	1.0	ND	ND	ND
1,4-Dichlorobenzene	1.0	ND	ND	ND
Dichlorodifluoromethane	1.0	ND	ND	ND
1,1-Dichloroethane	1.0	ND	ND	ND
1,2-Dichloroethane	1.0	ND	ND	ND
1,1-Dichloroethene	1.0	ND	ND	ND
1,2-Dichloroethene (Cis)	1.0	ND	ND	ND
✓1,2-Dichloroethene (Trans)	1.0	ND	ND	ND
Dichloromethane	3.0	ND	ND	ND
1,2-Dichloropropane	1.0	ND	ND	ND
1,3-Dichloropropane	1.0	ND	ND	ND
2,2-Dichloropropane	1.0	ND	ND	ND
1,1-Dichloropropene	1.0	ND	ND	ND
cis-1,3-Dichloropropene	1.0	ND	ND	ND

(Continued)

EPA Method - 8260 (page 2)

	Client ID:	**BF22-1**	**BF22-2**	**BF22-3**
	HEAL#:	9904014-1	9904014-2	9904014-3
	Analysis Date:	4/6/99	4/6/99	4/6/99
Compound	MDL	Result	Result	Result
trans-1,3-Dichloropropene	1.0	ND	ND	ND
Ethylbenzene	1.0	ND	ND	**38**
Hexachlorobutadiene	1.0	ND	ND	**1.2**
Isopropylbenzene	1.0	ND	ND	**14**
4-Isopropyltoluene	1.0	ND	ND	**1.0**
Naphthalene	2.0	**5.1**	ND	**4.3**
n-propylbenzene	1.0	ND	ND	**4.0**
Styrene	1.0	ND	ND	ND
1,1,1,2-Tetrachloroethane	1.0	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	**2.2**
Tetrachloroethene (PCE)	1.0	**1.8**	ND	ND
Toluene	1.0	ND	ND	ND
1,2,3-Trichlorobenzene	1.0	ND	ND	**3.7**
1,2,4-Trichlorobenzene	1.0	ND	ND	ND
1,1,1-Trichloroethane	1.0	ND	ND	ND
1,1,2-Trichloroethane	1.0	ND	ND	ND
Trichloroethene (TCE)	1.0	ND	ND	ND
Trichlorofluoromethane	1.0	ND	ND	ND
1,2,3-Trichloropropane	2.0	ND	ND	ND
1,2,4-Trimethylbenzene	1.0	ND	ND	**3.0**
1,3,5-Trimethylbenzene	1.0	ND	ND	**3.9**
Vinyl Chloride	2.0	ND	ND	ND
Xylenes (Total)	1.0	ND	ND	**2.0**
MTBE	1.0	ND	ND	**1.0**

Surrogates:			
DBFM Recovery	97%	95%	92%
1,2-DCA-d4 Recovery	115%	88%	111%
d8-Toluene Recovery	103%	109%	102%
BFB Recovery	97%	95%	91%
Dilution	1	1	1

Hall Environmental Analysis Laboratory

Client:	Billings & Assoc., Inc.	**Date Collected:**	4/2/99
Project:	Bar-F #22	**Date Received:**	4/2/99
Project Manager:	Brad Billings	**Sample Matrix:**	Aqueous
Project Number:	#22	**Extraction Date:**	NA

EPA Method - 8260 (page 1)

Units PPB (ug/L)

	Client ID:	**BF22-4**	**BF22-5**	**BF22-7**
	HEAL#:	9904014-4	9904014-5	9904014-6
	Analysis Date:	4/6/99	4/6/99	4/7/99
Compound	MDL	Result	Result	Result
Benzene	1.0	ND	ND	**230**
Bromobenzene	1.0	ND	ND	<100
Bromochloromethane	1.0	ND	ND	<100
Bromodichloromethane	1.0	ND	ND	<100
Bromoform	1.0	**1.0**	**1.0**	<100
Bromomethane	1.0	ND	ND	<100
n-Butylbenzene	1.0	**2.2**	ND	<100
sec-Butylbenzene	1.0	**4.5**	ND	<100
tert-Butylbenzene	1.0	ND	ND	<100
Carbon Tetracholride	1.0	ND	ND	<100
Chlorobenzene	1.0	ND	ND	<100
Chloroethane	2.0	ND	ND	<200
Chloroform	1.0	ND	ND	<100
Chloromethane	1.0	ND	ND	<100
2-Chlorotoluene	1.0	ND	ND	<100
4-Chlorotoluene	1.0	ND	ND	<100
Dibromochloromethane	1.0	ND	ND	<100
1,2-Dibromo-3-chloropropane	2.0	ND	ND	<100
1,2-Dibromoethane (EDB)	1.0	ND	**1.1**	<100
Dibromomethane	2.0	ND	ND	<200
1,2-Dichlorobenzene	1.0	ND	ND	<100
1,3-Dichlorobenzene	1.0	ND	ND	<100
1,4-Dichlorobenzene	1.0	ND	ND	<100
Dichlorodifluoromethane	1.0	ND	ND	<100
1,1-Dichloroethane	1.0	ND	ND	<100
1,2-Dichloroethane	1.0	ND	ND	<100
1,1-Dichloroethene	1.0	ND	ND	<100
1,2-Dichloroethene (Cis)	1.0	ND	ND	<100
1,2-Dichloroethene (Trans)	1.0	ND	ND	<100
Dichloromethane	3.0	ND	ND	<300
1,2-Dichloropropane	1.0	ND	ND	<100
1,3-Dichloropropane	1.0	ND	ND	<100
2,2-Dichloropropane	1.0	ND	ND	<100
1,1-Dichloropropene	1.0	ND	ND	<100
cis-1,3-Dichloropropene	1.0	ND	ND	<100

(Continued)

EPA Method - 8260 (page 2)

	Client ID:	**BF22-4**	**BF22-5**	**BF22-7**
	HEAL#:	9904014-4	9904014-5	9904014-6
	Analysis Date:	4/6/99	4/6/99	4/7/99
Compound	MDL	Result	Result	Result
trans-1,3-Dichloropropene	1.0	ND	ND	<100
Ethylbenzene	1.0	**14**	ND	**3,100**
Hexachlorobutadiene	1.0	**1.8**	**2.1**	<100
Isopropylbenzene	1.0	**2.1**	ND	**140**
4-Isopropyltoluene	1.0	ND	ND	<100
Naphthalene	2.0	**6.7**	**4.0**	**470**
n-propylbenzene	1.0	**4.0**	ND	**380**
Styrene	1.0	ND	ND	<100
1,1,1,2-Tetrachloroethane	1.0	ND	ND	<100
1,1,2,2-Tetrachloroethane	1.0	**1.5**	**1.6**	<100
Tetrachloroethene (PCE)	1.0	ND	**1.6**	<100
Toluene	1.0	ND	ND	**290**
1,2,3-Trichlorobenzene	1.0	**3.3**	**2.0**	<100
1,2,4-Trichlorobenzene	1.0	ND	**1.4**	<100
1,1,1-Trichloroethane	1.0	ND	ND	<100
1,1,2-Trichloroethane	1.0	ND	ND	<100
Trichloroethene (TCE)	1.0	ND	ND	<100
Trichlorofluoromethane	1.0	ND	ND	<100
1,2,3-Trichloropropane	2.0	ND	ND	<200
1,2,4-Trimethylbenzene	1.0	ND	ND	**550**
1,3,5-Trimethylbenzene	1.0	ND	ND	**210**
Vinyl Chloride	2.0	ND	ND	<200
Xylenes (Total)	1.0	ND	ND	**4,300**
MTBE	1.0	**1.2**	**1.5**	<100

Surrogates:			
DBFM Recovery	95%	87%	89%
1,2-DCA-d4 Recovery	98%	87%	105%
d8-Toluene Recovery	105%	104%	98%
BFB Recovery	96%	94%	96%
Dilution	1	1	100

REFERENCE 15

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **303043**
March 31, 2003

CAMP, DRESSER & McKEE, INC.
121 TIJERAS AVE. NE Ste 1000
ALBUQUERQUE, NM 87102

RECEIVED
MAR 31 2003
CAMP DRESSER & McKEE INC.
ALBUQUERQUE

Project Name N.MAIN (INCL. SCOTT'S)
Project Number (NONE)

Attention: JEFF WALKER

On 03/14/03 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

EPA method 504.1 and 8260 analyses were performed by Pinnacle Laboratories, Inc. Albuquerque, NM.

All remaining analyses were performed by Severn Trent Laboratories, Inc. Pensacola, FL.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Fre[illegible]y NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE ID	: 303043
PROJECT #	: (NONE)	DATE RECEIVED	: 03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)	REPORT DATE	: 03/31/03

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
303043 - 01	MW-1	AQUEOUS	03/13/03
303043 - 02	MW-5	AQUEOUS	03/13/03
303043 - 03	MW-6	AQUEOUS	03/13/03
303043 - 04	MW-1 (SCOTT'S)	AQUEOUS	03/14/03
303043 - 05	MW-3 (SCOTT'S)	AQUEOUS	03/14/03
303043 - 06	MW-6 (SCOTT'S)	AQUEOUS	03/13/03
303043 - 07	MW-7 (SCOTT'S)	AQUEOUS	03/14/03
303043 - 08	MW-9 (SCOTT'S)	AQUEOUS	03/14/03
303043 - 09	BF-22-2	AQUEOUS	03/13/03
303043 - 10	BF-22-3	AQUEOUS	03/14/03
303043 - 11	BF-22-7	AQUEOUS	03/13/03
303043 - 12	BF-22-4	AQUEOUS	03/13/03
303043 - 13	MW-11 (SCOTT'S)	AQUEOUS	03/14/03
303043 - 14	TRIP BLANK	AQUEOUS	03/06/03

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)		
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	032403A	AQUEOUS	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	110 (80 - 120)
Toluene-d8	102 (88 - 110)
Bromofluorobenzene	101 (86 - 115)

PINNACLE LABORATORIES

2709-D Pan American Freeway
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260
CLIENT : CAMP, DRESSER & McKEE, INC. PINNACLE I.D. : 303043
PROJECT # : (NONE)
PROJECT NAME : N.MAIN (INCL. SCOTT'S)

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	032403A	AQUEOUS	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)		
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	032103A	AQUEOUS	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	104
	(80 - 120)
Toluene-d8	103
	(88 - 110)
Bromofluorobenzene	100
	(86 - 115)

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)		
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	032103A	AQUEOUS	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-14	TRIP BLANK	AQUEOUS	03/06/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	111 (80 - 120)
Toluene-d8	104 (88 - 110)
Bromofluorobenzene	102 (86 - 115)

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-14	TRIP BLANK	AQUEOUS	03/06/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-04	MW-1 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS	
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L	
m&p Xylenes (108-38-3, 106-42-3)	**1.0**	**510**	**ug/L**	**D10**
o-Xylene (95-47-6)	**1.0**	**410**	**ug/L**	**D10**
Styrene (100-42-5)	1.0	< 1.0	ug/L	
Bromoform (75-25-2)	1.0	< 1.0	ug/L	
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L	
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L	
Isopropyl Benzene (98-82-8)	**1.0**	**22**	**ug/L**	
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L	
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L	
n-Propylbenzene (103-65-1)	**1.0**	**67**	**ug/L**	
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L	
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L	
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**110**	**ug/L**	
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L	
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**380**	**ug/L**	**D10**
sec-Butylbenzene (135-98-8)	**1.0**	**8.5**	**ug/L**	
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L	
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L	
p-Isopropyltoluene (99-87-6)	**1.0**	**3.8**	**ug/L**	
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L	
n-Butylbenzene (104-51-8)	**1.0**	**21**	**ug/L**	
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L	
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L	
Naphthalene (91-20-3)	**3.0**	**120**	**ug/L**	
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L	
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L	
2-Methyl Naphthalene (91-57-6)	**5.0**	**110**	**ug/L**	
1-Methyl Naphthalene (90-12-0)	**5.0**	**57**	**ug/L**	

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	111 (80 - 120)
Toluene-d8	102 (88 - 110)
Bromofluorobenzene	102 (86 - 115)

D10 = Reported from a 10X dilution run on 03/21/03.

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-04	MW-1 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS	
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L	
Chloromethane (74-87-3)	1.0	< 1.0	ug/L	
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L	
Bromomethane (74-83-9)	1.0	< 1.0	ug/L	
Chloroethane (75-00-3)	1.0	< 1.0	ug/L	
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L	
Acetone (67-64-1)	10	< 10	ug/L	
Acrolein (107-02-8)	5.0	< 5.0	ug/L	
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L	
Iodomethane (74-88-4)	5.0	< 5.0	ug/L	
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L	
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L	
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L	
Methyl-t-butyl Ether (1634-04-4)	**1.0**	**4.1**	**ug/L**	
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L	
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L	
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L	
2-Butanone (78-93-3)	10	< 10	ug/L	
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L	
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L	
Chloroform (67-66-3)	1.0	< 1.0	ug/L	
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L	
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L	
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L	
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L	
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L	
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L	
Benzene (71-43-2)	**1.0**	**150**	**ug/L**	
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L	
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L	
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L	
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L	
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L	
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L	
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L	
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L	
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L	
Toluene (108-88-3)	**1.0**	**300**	**ug/L**	**D10**
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L	
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L	
2-Hexanone (591-78-6)	10	< 10	ug/L	
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L	
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L	
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L	
Ethylbenzene (100-41-4)	**1.0**	**310**	**ug/L**	**D10**

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-05	MW-3 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	**1.0**	**1.1**	**ug/L**
o-Xylene (95-47-6)	**1.0**	**4.2**	**ug/L**
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**21**	**ug/L**
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	**1.0**	**46**	**ug/L**
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**29**	**ug/L**
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**32**	**ug/L**
sec-Butylbenzene (135-98-8)	**1.0**	**5.4**	**ug/L**
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	**1.0**	**2.5**	**ug/L**
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	**3.0**	**61**	**ug/L**
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	**5.0**	**52**	**ug/L**
1-Methyl Naphthalene (90-12-0)	**5.0**	**50**	**ug/L**

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	110 (80 - 120)
Toluene-d8	102 (88 - 110)
Bromofluorobenzene	102 (86 - 115)

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-05	MW-3 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	**1.0**	**98**	**ug/L**

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-06	MW-6 (SCOTT'S)	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-06	MW-6 (SCOTT'S)	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	106
	(80 - 120)
Toluene-d8	100
	(88 - 110)
Bromofluorobenzene	98
	(86 - 115)

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PINNACLE LABORATORIES

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-07	MW-7 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
[illegible]methane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
[illegible]ethyl-2-Pentanone (108-10-1)	10	< 10	ug/L
[illegible]exanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-07	MW-7 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	109 (80 - 120)
Toluene-d8	102 (88 - 110)
Bromofluorobenzene	103 (86 - 115)

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-08	MW-9 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
domethane (74-88-4)	5.0	< 5.0	ug/L
thylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
lexanone (591-78-6)	10	< 10	ug/L
romochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-08	MW-9 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	109 (80 - 120)
Toluene-d8	102 (88 - 110)
Bromofluorobenzene	100 (86 - 115)

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260
CLIENT : CAMP, DRESSER & McKEE, INC.
PROJECT # : (NONE)
PROJECT NAME : N.MAIN (INCL. SCOTT'S)

PINNACLE I.D. : 303043
DATE RECEIVED : 03/14/03

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-13	MW-11 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**1.0**	**ug/L**
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	**5.0**	**10**	**ug/L**

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	105 (80 - 120)
Toluene-d8	98 (88 - 110)
Bromofluorobenzene	97 (86 - 115)

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-13	MW-11 (SCOTT'S)	AQUEOUS	03/14/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	**1.0**	**1.1**	**ug/L**
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	**1.0**	**4.4**	**ug/L**
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
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GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260
CLIENT : CAMP, DRESSER & McKEE, INC.
PINNACLE I.D. : 303043
PROJECT # : (NONE)
DATE RECEIVED : 03/14/03
PROJECT NAME : N.MAIN (INCL. SCOTT'S)

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-09	BF-22-2	AQUEOUS	03/13/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
[illegible]omethane (74-88-4)	5.0	< 5.0	ug/L
[illegible]hylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	**1.0**	**5.0**	**ug/L**
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	**1.0**	**88**	**ug/L**
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
[illegible]exanone (591-78-6)	10	< 10	ug/L
[illegible]romochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	**1.0**	**51**	**ug/L**

PINNACLE LABORATORIES

2709-D Pan American Fre[illegible] NE
Albuquerque, New Mexico 87107
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Fax (505) 344-4413

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-09	BF-22-2	AQUEOUS	03/13/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**8.3**	**ug/L**
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	**1.0**	**16**	**ug/L**
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**6.3**	**ug/L**
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**1.6**	**ug/L**
sec-Butylbenzene (135-98-8)	**1.0**	**13**	**ug/L**
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	**1.0**	**2.5**	**ug/L**
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	**3.0**	**3.5**	**ug/L**
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	**5.0**	**87**	**ug/L**

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	107 (80 - 120)
Toluene-d8	105 (88 - 110)
Bromofluorobenzene	104 (86 - 115)

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-10	BF-22-3	AQUEOUS	03/14/03	N/A	03/24/03	5

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS	
Dichlorodifluoromethane (75-71-8)	1.0	< 5.0	ug/L	
Chloromethane (74-87-3)	1.0	< 5.0	ug/L	
Vinyl Chloride (75-01-4)	1.0	< 5.0	ug/L	
Bromomethane (74-83-9)	1.0	< 5.0	ug/L	
Chloroethane (75-00-3)	1.0	< 5.0	ug/L	
Trichlorofluoromethane (75-69-4)	1.0	< 5.0	ug/L	
Acetone (67-64-1)	10	< 50	ug/L	
Acrolein (107-02-8)	5.0	< 25	ug/L	
1,1-Dichloroethene (75-35-4)	1.0	< 5.0	ug/L	
Iodomethane (74-88-4)	5.0	< 25	ug/L	
Methylene Chloride (75-09-2)	1.0	< 5.0	ug/L	
Acrylonitrile (107-13-1)	5.0	< 25	ug/L	
cis-1,2-Dichloroethene (156-59-2)	1.0	< 5.0	ug/L	
Methyl-t-butyl Ether (1634-04-4)	**1.0**	**41**	**ug/L**	
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 25	ug/L	
1,1-Dichloroethane (75-34-3)	1.0	< 5.0	ug/L	
trans-1,2-Dichloroethene (156-60-5)	1.0	< 5.0	ug/L	
2-Butanone (78-93-3)	10	< 50	ug/L	
Carbon Disulfide (75-15-0)	1.0	< 5.0	ug/L	
Bromochloromethane (74-97-5)	1.0	< 5.0	ug/L	
Chloroform (67-66-3)	1.0	< 5.0	ug/L	
2,2-Dichloropropane (594-20-7)	1.0	< 5.0	ug/L	
1,2-Dichloroethane (107-06-2)	1.0	< 5.0	ug/L	
Vinyl Acetate (108-05-4)	1.0	< 5.0	ug/L	
1,1,1-Trichloroethane (71-55-6)	1.0	< 5.0	ug/L	
1,1-Dichloropropene (563-58-6)	1.0	< 5.0	ug/L	
Carbon Tetrachloride (56-23-5)	1.0	< 5.0	ug/L	
Benzene (71-43-2)	**1.0**	**3100**	**ug/L**	**D50**
1,2-Dichloropropane (78-87-5)	1.0	< 5.0	ug/L	
Trichloroethene (79-01-6)	1.0	< 5.0	ug/L	
Bromodichloromethane (75-27-4)	1.0	< 5.0	ug/L	
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 50	ug/L	
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 5.0	ug/L	
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 5.0	ug/L	
1,1,2-Trichloroethane (79-00-5)	1.0	< 5.0	ug/L	
1,3-Dichloropropane (142-28-9)	1.0	< 5.0	ug/L	
Dibromomethane (74-95-3)	1.0	< 5.0	ug/L	
Toluene (108-88-3)	**1.0**	**340**	**ug/L**	
1,2-Dibromoethane (106-93-4)	1.0	< 5.0	ug/L	
4-Methyl-2-Pentanone (108-10-1)	10	< 50	ug/L	
2-Hexanone (591-78-6)	10	< 50	ug/L	
Dibromochloromethane (124-48-1)	1.0	< 5.0	ug/L	
Tetrachloroethene (127-18-4)	1.0	< 5.0	ug/L	
Chlorobenzene (108-90-7)	1.0	< 5.0	ug/L	
Ethylbenzene (100-41-4)	**1.0**	**1800**	**ug/L**	**D50**

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-10	BF-22-3	AQUEOUS	03/14/03	N/A	03/24/03	5

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS	
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 5.0	ug/L	
m&p Xylenes (108-38-3, 106-42-3)	**1.0**	**4900**	**ug/L**	**D50**
o-Xylene (95-47-6)	**1.0**	**1300**	**ug/L**	**D50**
Styrene (100-42-5)	1.0	< 5.0	ug/L	
Bromoform (75-25-2)	1.0	< 5.0	ug/L	
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 5.0	ug/L	
1,2,3-Trichloropropane (96-18-4)	1.0	< 5.0	ug/L	
Isopropyl Benzene (98-82-8)	**1.0**	**120**	**ug/L**	
Bromobenzene (108-86-1)	1.0	< 5.0	ug/L	
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 5.0	ug/L	
n-Propylbenzene (103-65-1)	**1.0**	**290**	**ug/L**	
2-Chlorotoluene (95-49-8)	1.0	< 5.0	ug/L	
4-Chlorotoluene (106-43-4)	1.0	< 5.0	ug/L	
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**790**	**ug/L**	
tert-Butylbenzene (98-06-6)	1.0	< 5.0	ug/L	
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**3000**	**ug/L**	**D50**
sec-Butylbenzene (135-98-8)	**1.0**	**27**	**ug/L**	
1,3-Dichlorobenzene (541-73-1)	1.0	< 5.0	ug/L	
1,4-Dichlorobenzene (106-46-7)	1.0	< 5.0	ug/L	
p-Isopropyltoluene (99-87-6)	**1.0**	**15**	**ug/L**	
1,2-Dichlorobenzene (95-50-1)	1.0	< 5.0	ug/L	
n-Butylbenzene (104-51-8)	**1.0**	**57**	**ug/L**	
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 5.0	ug/L	
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 5.0	ug/L	
Naphthalene (91-20-3)	**3.0**	**970**	**ug/L**	
Hexachlorobutadiene (87-68-3)	1.0	< 5.0	ug/L	
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 5.0	ug/L	
2-Methyl Naphthalene (91-57-6)	**5.0**	**510**	**ug/L**	
1-Methyl Naphthalene (90-12-0)	**5.0**	**310**	**ug/L**	

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	97 (80 - 120)
Toluene-d8	90 (88 - 110)
Bromofluorobenzene	93 (86 - 115)

D50 = Reported from a 50X dilution run on 03/21/03.

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PINNACLE LABORATORIES

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-12	BF-22-4	AQUEOUS	03/13/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	**1.0**	**1.2**	**ug/L**
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	**1.0**	**18**	**ug/L**
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	**1.0**	**9.5**	**ug/L**
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	**1.0**	**5.1**	**ug/L**

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-12	BF-22-4	AQUEOUS	03/13/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	**1.0**	**23**	**ug/L**
o-Xylene (95-47-6)	**1.0**	**11**	**ug/L**
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**1.9**	**ug/L**
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	**1.0**	**1.3**	**ug/L**
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**6.0**	**ug/L**
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**17**	**ug/L**
sec-Butylbenzene (135-98-8)	**1.0**	**5.3**	**ug/L**
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	**1.0**	**1.1**	**ug/L**
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	**3.0**	**8.1**	**ug/L**
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	**5.0**	**6.7**	**ug/L**
1-Methyl Naphthalene (90-12-0)	**5.0**	**80**	**ug/L**

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	111 (80 - 120)
Toluene-d8	103 (88 - 110)
Bromofluorobenzene	103 (86 - 115)

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PINNACLE LABORATORIES

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-11	BF-22-7	AQUEOUS	03/13/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS	
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L	
Chloromethane (74-87-3)	1.0	< 1.0	ug/L	
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L	
Bromomethane (74-83-9)	1.0	< 1.0	ug/L	
Chloroethane (75-00-3)	1.0	< 1.0	ug/L	
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L	
Acetone (67-64-1)	10	< 10	ug/L	
Acrolein (107-02-8)	5.0	< 5.0	ug/L	
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L	
Iodomethane (74-88-4)	5.0	< 5.0	ug/L	
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L	
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L	
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L	
Methyl-t-butyl Ether (1634-04-4)	**1.0**	**19**	**ug/L**	
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L	
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L	
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L	
2-Butanone (78-93-3)	10	< 10	ug/L	
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L	
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L	
Chloroform (67-66-3)	1.0	< 1.0	ug/L	
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L	
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L	
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L	
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L	
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L	
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L	
Benzene (71-43-2)	**1.0**	**72**	**ug/L**	**D10**
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L	
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L	
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L	
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L	
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L	
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L	
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L	
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L	
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L	
Toluene (108-88-3)	**1.0**	**110**	**ug/L**	
~~1,2-Dibromoethane (106-93-4)~~	~~1.0~~	~~< 1.0~~	~~ug/L~~	
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L	
2-Hexanone (591-78-6)	10	< 10	ug/L	
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L	
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L	
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L	
Ethylbenzene (100-41-4)	**1.0**	**980**	**ug/L**	**D10**

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PINNACLE LABORATORIES

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-11	BF-22-7	AQUEOUS	03/13/03	N/A	03/24/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS	
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L	
m&p Xylenes (108-38-3, 106-42-3)	**1.0**	**340**	**ug/L**	**D10**
o-Xylene (95-47-6)	**1.0**	**72**	**ug/L**	**D10**
Styrene (100-42-5)	1.0	< 1.0	ug/L	
Bromoform (75-25-2)	1.0	< 1.0	ug/L	
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L	
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L	
Isopropyl Benzene (98-82-8)	**1.0**	**41**	**ug/L**	
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L	
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L	
n-Propylbenzene (103-65-1)	**1.0**	**100**	**ug/L**	
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L	
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L	
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**66**	**ug/L**	
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L	
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**240**	**ug/L**	**D10**
sec-Butylbenzene (135-98-8)	**1.0**	**6.9**	**ug/L**	
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L	
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L	
p-Isopropyltoluene (99-87-6)	**1.0**	**2.1**	**ug/L**	
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L	
n-Butylbenzene (104-51-8)	**1.0**	**9.4**	**ug/L**	
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L	
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L	
Naphthalene (91-20-3)	**3.0**	**290**	**ug/L**	**D10**
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L	
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L	
2-Methyl Naphthalene (91-57-6)	**5.0**	**56**	**ug/L**	
1-Methyl Naphthalene (90-12-0)	**5.0**	**90**	**ug/L**	

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	107 (80 - 120)
Toluene-d8	101 (88 - 110)
Bromofluorobenzene	102 (86 - 115)

D10 = Reported from a 10X dilution run on 03/21/03.

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-01	MW-1	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
domethane (74-88-4)	5.0	< 5.0	ug/L
ethylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
~~1,2-Dichloropropane (78-87-5)~~	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
Hexanone (591-78-6)	10	< 10	ug/L
bromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	**1.0**	**12**	**ug/L**

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-01	MW-1	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	**1.0**	**8.8**	**ug/L**
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**1.1**	**ug/L**
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	**1.0**	**3.1**	**ug/L**
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**3.4**	**ug/L**
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**1.9**	**ug/L**
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	**3.0**	**6.1**	**ug/L**
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	**5.0**	**5.6**	**ug/L**
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	106 (80 - 120)
Toluene-d8	100 (88 - 110)
Bromofluorobenzene	97 (86 - 115)

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260
CLIENT	: CAMP, DRESSER & McKEE, INC.
PROJECT #	: (NONE)
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)

PINNACLE I.D. : 303043
DATE RECEIVED : 03/14/03

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-02	MW-5	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
omethane (74-88-4)	5.0	< 5.0	ug/L
hylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
exanone (591-78-6)	10	< 10	ug/L
omochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-02	MW-5	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
~~m&p Xylenes (108-38-3, 106-42-3)~~	1.0	< 1.0	ug/L
~~o-Xylene (95-47-6)~~	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**4.2**	**ug/L**
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	**1.0**	**10**	**ug/L**
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	**1.0**	**8.5**	**ug/L**
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	**3.0**	**3.0**	**ug/L**
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
~~**2-Methyl Naphthalene (91-57-6)**~~	**5.0**	**23**	**ug/L**
1-Methyl Naphthalene (90-12-0)	**5.0**	**24**	**ug/L**

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	105 (80 - 120)
Toluene-d8	102 (88 - 110)
Bromofluorobenzene	101 (86 - 115)

PINNACLE LABORATORIES

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GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-03	MW-6	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	1.0	< 1.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	1.0	< 1.0	ug/L
1,2,3-Trichloropropane (96-18-4)	1.0	< 1.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	1.0	< 1.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	1.0	< 1.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	1.0	< 1.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	1.0	< 1.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	1.0	< 1.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	109 (80 - 120)
Toluene-d8	101 (88 - 110)
Bromofluorobenzene	99 (86 - 115)

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PINNACLE LABORATORIES

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: CAMP, DRESSER & McKEE, INC.	PINNACLE I.D. :	303043
PROJECT #	: (NONE)	DATE RECEIVED :	03/14/03
PROJECT NAME	: N.MAIN (INCL. SCOTT'S)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
303043-03	MW-6	AQUEOUS	03/13/03	N/A	03/21/03	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	1.0	< 1.0	ug/L
Chloromethane (74-87-3)	1.0	< 1.0	ug/L
Vinyl Chloride (75-01-4)	1.0	< 1.0	ug/L
Bromomethane (74-83-9)	1.0	< 1.0	ug/L
Chloroethane (75-00-3)	1.0	< 1.0	ug/L
Trichlorofluoromethane (75-69-4)	1.0	< 1.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	5.0	< 5.0	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	1.0	< 1.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L

REFERENCE 16

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	:	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	:	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	:	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	:	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-01	SCOTT'S MW-9	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED :	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-01	SCOTTS MW-9	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	2.0	< 2.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY

1,2-Dichloroethane-d4	101 (76 - 114)
Toluene-d8	100 (88 - 110)
Bromofluorobenzene	95 (86 - 115)

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PINNACLE LABS

Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	: 606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	: 06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	: GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	: BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-02	SCOTTS MW-13	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	:	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	:	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	:	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	:	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-02	SCOTTS MW-13	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	**1.0**	**1.5**	**ug/L**
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	**2.0**	**8.1**	**ug/L**
o-Xylene (95-47-6)	**1.0**	**14**	**ug/L**
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**1.0**	**ug/L**
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	**1.0**	**3.1**	**ug/L**
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**12**	**ug/L**
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**18**	**ug/L**
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	**3.0**	**3.3**	**ug/L**
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	**5.0**	**7.4**	**ug/L**

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	94 (76 - 114)
Toluene-d8	94 (88 - 110)
Bromofluorobenzene	90 (86 - 115)

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED :	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-03	MW-8	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED :	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-03	MW-8	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	2.0	< 2.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY

1,2-Dichloroethane-d4	99 (76 - 114)
Toluene-d8	98 (88 - 110)
Bromofluorobenzene	93 (86 - 115)

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	: 606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	: 06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	: GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	: BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-04	MW-9	AQUEOUS	06/29/06	N/A	07/07/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	6.5	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	1.2	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED :	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-04	MW-9	AQUEOUS	06/29/06	N/A	07/07/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	1.0	22	ug/L
~~1,1,1,2-Tetrachloroethane (630-20-6)~~	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	2.0	53	ug/L
o-Xylene (95-47-6)	1.0	16	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	1.7	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	1.0	3.3	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	10	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	18	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
~~1,3-Dichlorobenzene (541-73-1)~~	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	93 (76 - 114)
Toluene-d8	95 (88 - 110)
Bromofluorobenzene	89 (86 - 115)

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	:	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	:	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	:	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	:	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-05	MW-10	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	**1.0**	**45**	**ug/L**
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	**1.0**	**9.6**	**ug/L**
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	:	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	:	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	:	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	:	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-05	MW-10	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	1.0	180	ug/L
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	2.0	240	ug/L
o-Xylene (95-47-6)	1.0	88	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	14	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	1.0	33	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	57	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	180	ug/L
sec-Butylbenzene (135-98-8)	1.0	2.3	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	1.1	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	3.9	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	3.0	43	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	11	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	11	ug/L

SURROGATE % RECOVERY

1,2-Dichloroethane-d4	98
	(76 - 114)
Toluene-d8	98
	(88 - 110)
Bromofluorobenzene	94
	(86 - 115)

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED :	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-06	MW-11	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	12	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	1.2	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	:	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	:	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	:	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	:	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-06	MW-11	AQUEOUS	06/29/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	**1.0**	**74**	ug/L
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	**2.0**	**62**	ug/L
o-Xylene (95-47-6)	**1.0**	**3.3**	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	**1.0**	**8.6**	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	**1.0**	**6.6**	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	**1.0**	**12**	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	**1.0**	**25**	ug/L
sec-Butylbenzene (135-98-8)	**1.0**	**1.9**	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	**3.0**	**3.4**	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	94 (76 - 114)
Toluene-d8	93 (88 - 110)
Bromofluorobenzene	88 (86 - 115)

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED :	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-07	TRIP BLANK	AQUEOUS	06/23/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

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PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	:	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.	DATE RECEIVED	:	06/30/06
PROJECT #	: (NONE)	INSTRUMENT ID	:	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	:	BP

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
606220-07	TRIP BLANK	AQUEOUS	06/23/06	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	2.0	< 2.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	99 (76 - 114)
Toluene-d8	96 (88 - 110)
Bromofluorobenzene	98 (86 - 115)

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.		
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	070606A	AQUEOUS	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.		
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	070606A	AQUEOUS	N/A	07/06/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	2.0	< 2.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	99 (76 - 114)
Toluene-d8	97 (88 - 110)
Bromofluorobenzene	91 (86 - 115)

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D. :	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.		
PROJECT #	: (NONE)	INSTRUMENT ID :	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST :	BP

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	070706A	AQUEOUS	N/A	07/07/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Dichlorodifluoromethane (75-71-8)	5.0	< 5.0	ug/L
Chloromethane (74-87-3)	5.0	< 5.0	ug/L
Vinyl Chloride (75-01-4)	5.0	< 5.0	ug/L
Bromomethane (74-83-9)	5.0	< 5.0	ug/L
Chloroethane (75-00-3)	5.0	< 5.0	ug/L
Trichlorofluoromethane (75-69-4)	5.0	< 5.0	ug/L
Acetone (67-64-1)	10	< 10	ug/L
Acrolein (107-02-8)	10	< 10	ug/L
1,1-Dichloroethene (75-35-4)	1.0	< 1.0	ug/L
Iodomethane (74-88-4)	5.0	< 5.0	ug/L
Methylene Chloride (75-09-2)	1.0	< 1.0	ug/L
Acrylonitrile (107-13-1)	5.0	< 5.0	ug/L
cis-1,2-Dichloroethene (156-59-2)	1.0	< 1.0	ug/L
Methyl-t-butyl Ether (1634-04-4)	1.0	< 1.0	ug/L
1,1,2-Trichlorotrifluoroethane (76-13-1)	5.0	< 5.0	ug/L
1,1-Dichloroethane (75-34-3)	1.0	< 1.0	ug/L
trans-1,2-Dichloroethene (156-60-5)	1.0	< 1.0	ug/L
2-Butanone (78-93-3)	10	< 10	ug/L
Carbon Disulfide (75-15-0)	1.0	< 1.0	ug/L
Bromochloromethane (74-97-5)	1.0	< 1.0	ug/L
Chloroform (67-66-3)	1.0	< 1.0	ug/L
2,2-Dichloropropane (594-20-7)	1.0	< 1.0	ug/L
1,2-Dichloroethane (107-06-2)	1.0	< 1.0	ug/L
Vinyl Acetate (108-05-4)	5.0	< 5.0	ug/L
1,1,1-Trichloroethane (71-55-6)	1.0	< 1.0	ug/L
1,1-Dichloropropene (563-58-6)	1.0	< 1.0	ug/L
Carbon Tetrachloride (56-23-5)	1.0	< 1.0	ug/L
Benzene (71-43-2)	1.0	< 1.0	ug/L
1,2-Dichloropropane (78-87-5)	1.0	< 1.0	ug/L
Trichloroethene (79-01-6)	1.0	< 1.0	ug/L
Bromodichloromethane (75-27-4)	1.0	< 1.0	ug/L
2-Chloroethyl Vinyl Ether (110-75-8)	10	< 10	ug/L
cis-1,3-Dichloropropene (10061-01-5)	1.0	< 1.0	ug/L
trans-1,3-Dichloropropene (10061-02-6)	1.0	< 1.0	ug/L
1,1,2-Trichloroethane (79-00-5)	1.0	< 1.0	ug/L
1,3-Dichloropropane (142-28-9)	1.0	< 1.0	ug/L
Dibromomethane (74-95-3)	1.0	< 1.0	ug/L
Toluene (108-88-3)	1.0	< 1.0	ug/L
1,2-Dibromoethane (106-93-4)	1.0	< 1.0	ug/L
4-Methyl-2-Pentanone (108-10-1)	10	< 10	ug/L
2-Hexanone (591-78-6)	10	< 10	ug/L
Dibromochloromethane (124-48-1)	1.0	< 1.0	ug/L
Tetrachloroethene (127-18-4)	1.0	< 1.0	ug/L
Chlorobenzene (108-90-7)	1.0	< 1.0	ug/L

PINNACLE LABS
Environmental Testing

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260B	PINNACLE I.D.	:	606220
CLIENT	: CAMP, DRESSER & McKEE, INC.			
PROJECT #	: (NONE)	INSTRUMENT ID	:	GC/MS2
PROJECT NAME	: NORTH MAIN	ANALYST	:	BP

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	070706A	AQUEOUS	N/A	07/07/06	1

PARAMETER (CAS#)	DET. LIMIT	RESULT	UNITS
Ethylbenzene (100-41-4)	1.0	< 1.0	ug/L
1,1,1,2-Tetrachloroethane (630-20-6)	1.0	< 1.0	ug/L
m&p Xylenes (108-38-3, 106-42-3)	2.0	< 2.0	ug/L
o-Xylene (95-47-6)	1.0	< 1.0	ug/L
Styrene (100-42-5)	1.0	< 1.0	ug/L
Bromoform (75-25-2)	1.0	< 1.0	ug/L
1,1,2,2-Tetrachloroethane (79-34-5)	2.0	< 2.0	ug/L
1,2,3-Trichloropropane (96-18-4)	2.0	< 2.0	ug/L
Isopropyl Benzene (98-82-8)	1.0	< 1.0	ug/L
Bromobenzene (108-86-1)	1.0	< 1.0	ug/L
trans-1,4-Dichloro-2-Butene (110-57-6)	2.0	< 2.0	ug/L
n-Propylbenzene (103-65-1)	1.0	< 1.0	ug/L
2-Chlorotoluene (95-49-8)	1.0	< 1.0	ug/L
4-Chlorotoluene (106-43-4)	1.0	< 1.0	ug/L
1,3,5-Trimethylbenzene (108-67-8)	1.0	< 1.0	ug/L
tert-Butylbenzene (98-06-6)	1.0	< 1.0	ug/L
1,2,4-Trimethylbenzene (95-63-6)	1.0	< 1.0	ug/L
sec-Butylbenzene (135-98-8)	1.0	< 1.0	ug/L
1,3-Dichlorobenzene (541-73-1)	1.0	< 1.0	ug/L
1,4-Dichlorobenzene (106-46-7)	1.0	< 1.0	ug/L
p-Isopropyltoluene (99-87-6)	1.0	< 1.0	ug/L
1,2-Dichlorobenzene (95-50-1)	1.0	< 1.0	ug/L
n-Butylbenzene (104-51-8)	1.0	< 1.0	ug/L
1,2-Dibromo-3-chloropropane (96-12-8)	5.0	< 5.0	ug/L
1,2,4-Trichlorobenzene (120-82-1)	2.0	< 2.0	ug/L
Naphthalene (91-20-3)	3.0	< 3.0	ug/L
Hexachlorobutadiene (87-68-3)	2.0	< 2.0	ug/L
1,2,3-Trichlorobenzene (87-61-6)	2.0	< 2.0	ug/L
2-Methyl Naphthalene (91-57-6)	5.0	< 5.0	ug/L
1-Methyl Naphthalene (90-12-0)	5.0	< 5.0	ug/L

SURROGATE % RECOVERY	
1,2-Dichloroethane-d4	99 (76 - 114)
Toluene-d8	98 (88 - 110)
Bromofluorobenzene	91 (86 - 115)

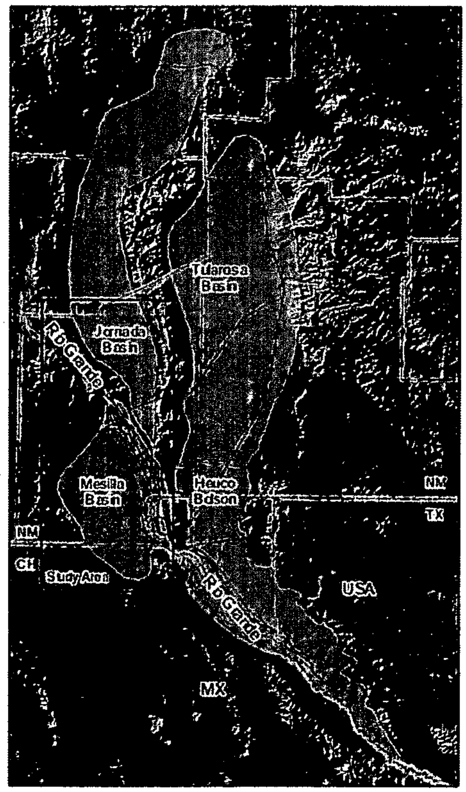
REFERENCE 17

JUNE 2004

CREATION OF A DIGITAL HYDROGEOLOGIC FRAMEWORK MODEL OF THE MESILLA BASIN AND SOUTHERN JORNADA DEL MUERTO BASIN

WRRI Technical Completion Report No. 332

John W. Hawley
John F. Kennedy



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CREATION OF A DIGITAL HYDROGEOLOGIC FRAMEWORK MODEL OF THE MESILLA BASIN AND SOUTHERN JORNADA DEL MUERTO BASIN

By

John W. Hawley
Senior Hydrogeologist
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and

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GIS Coordinator / Hydrogeologist
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New Mexico State University

for

Lower Rio Grande Water Users Organization

TECHNICAL COMPLETION REPORT

Account Number 01-4-23987b

June 2004

New Mexico Water Resources Research Institute

The research on which this report is based was financed in part by the Environmental Protection Agency, Region 6, and by the U.S. Department of the Interior, Geological Survey, through the New Mexico Water Resources Research Institute.

The Mesilla Basin, including the Mesilla Valley between Selden Canyon and El Paso del Norte (or El Paso Narrows), occupies most of the study area. To the north, the southern section of the Jornada del Muerto (or Jornada) topographic and structural basin is east of the lower Rincon Valley to upper Mesilla Valley reaches of the Rio Grande. Leasburg (irrigation-diversion) Dam, at the lower end of Selden Canyon (about 3,960 ft elev.), marks the northern boundary of both the Mesilla Valley and the "structural" Mesilla Basin. The very narrow El Paso del Norte segment of the Rio Grande Valley (floodplain elev. 3,715-25 ft) opens southeastward into the broad El Paso Valley section of the western Hueco Bolson. The river channel forms the International Boundary between El Paso del Norte and the Gulf of Mexico. Both the Selden Canyon and Paso del Norte constrictions are bedrock-floored features characterized by narrow valley floors (500-1,000 ft width range) and saturated-alluvial fills that are less than 75 ft thick.

1.3.2 Mesilla Basin and Valley

Excluding local mountain watersheds, the (topographic and structural) Mesilla Basin has an area of about 1,100 mi^2, including as much as 200 mi^2 in Chihuahua. It is bounded on the east by the Organ-Franklin-Sierra Juárez mountain chain and on the west by fault-block and volcanic uplands, which extend northward from the East Potrillo Mountains (near the International Boundary) to the Aden and Sleeping Lady Hills. El Paso del Norte occupies the narrow saddle between the Juárez–Cristo Rey and Franklin uplifts. Fillmore Pass (elev. ~4,200 ft) is a wide, alluvial-filled gap between the Franklin and Organ. Organ Needle (elev. 9,012 ft), in the central Organ Mountains, is the highest point on the basin perimeter. The Robledo and Doña Ana Mountains form the respective western and eastern boundaries in the upper Mesilla Valley section of the basin.

The Mesilla Basin extends southward about 65 mi from the mouth of Selden Canyon (Leasburg Dam site), to a poorly defined groundwater divide located about 20 mi south of the International Boundary southwest of the Santa Teresa Port of Entry and west of Sierra Juárez (Figs. 1-2, 1-3). The southern end of the topographic (and structural) basin merges southward with the floor of Bolson de Los Muertos in north-central Chihuahua (Córdoba et al. 1969; Hawley 1969; Morrison 1969; Reeves 1969; Hawley et al. 2000). Basin width varies from about 5 mi at its northern end to about 25 mi in its central part. The extensive, undissected basin floor west of the Mesilla Valley is locally designated the West Mesa or "La Mesa". The former name is used in this report, following USGS-WRD practice (e.g., Wilson et al. 1981; Nickerson and Myers 1993), and "La Mesa" is used only in reference to the relict fluvial plain of the ancestral Rio Grande (Plio-Pleistocene) La Mesa geomorphic surface (Hawley 1975; Hawley and Kottlowski 1969; Gile et al. 1981; Gile, Hawley et al. 1995).

The entrenched Mesilla Valley segment of the Rio Grande Valley occupies much of the eastern part of the Mesilla Basin and includes the Las Cruces area. The northwestern El Paso-Ciudad Juárez "metroplex" extends through El Paso del Norte into the southern end of the valley. The valley-floor geohydrologic unit (Rio Grande floodplain and channel) is about 60 mi long and up to 5 mi wide, and its area is about 215 mi^2 (135,000 acres); and the river's drainage basin above Leasburg Dam comprises about 28,000 mi^2 of New Mexico and southern Colorado (excluding the 2,940 mi^2 *closed basin* section of the San Luis Valley, Ortiz et al. 2001).

1.3.3 Jornada del Muerto Basin

The southern Jornada del Muerto Basin (area ~600 mi^2) is bounded on the east by the southern San Andres range and the north end of the Organ Mountains (between San Augustine Pass and Fillmore-Ice Canyon). The Doña Ana Mountains are the only major highland on the southwestern edge of the Jornada Basin. The dominant basin landforms comprise an extensive remnant of the ancestral Rio Grande fluvial plain (Plio-Pleistocene La Mesa geomorphic surface), and broad alluvial-fan-piedmont surfaces flanking the San Andres Range and Doña Ana Mountains (Gile et al. 1981, 1995; Gile 2002; Seager et al. 1987). The isolated Goat Mountain and Tortugas Mountain "hills" to the south of the Doña Ana's (eastern Las Cruces metro-area) are the sole surface expression of the discontinuous bedrock high that separates the Mesilla and Jornada structural basins (Fig. 1-2, Plates 1, 3a-d, 5a). At the northern project border, near the Doña Ana-Sierra County Line (Fig. 1-2), the level of the Jornada Basin floor topography is "disrupted" by the Point of Rocks uplift and outlying hilly uplands in the Jornada Draw-Flat Lake area to the east. In the northwestern part of the study area, another buried-bedrock high connects the Doña Ana, Selden Hills, and Tonuco uplifts (Plate 3a). The Jornada Basin merges with

1.4 REGIONAL GEOLOGIC SETTING

The study region is located in the southern part of the Rio Grande rift tectonic province, which is characterized by north-south-trending series deep structural basins between tilted-fault-block ranges and volcanic highlands. This major continental rift zone extends through central New Mexico from southern Colorado to Trans-Pecos Texas and northern Chihuahua (Chapin and Seager 1975; Hawley 1978; Chapin and Cather 1994; Fig. 1-1). The primary aquifer systems of the Rio Grande rift region comprise 1) thin Upper Quaternary fluvial deposits of the inner Rio Grande Valley (valley-fill aquifer system), and 2) the thick sedimentary fill of intermontane basins (basin-fill aquifer system). The Upper Cenozoic Santa Fe Group forms the bulk of the latter unit. The hydrogeologic framework formed by 1) the lithofacies and stratigraphic subdivisions of these two aquifer systems and 2) associated rift – basin and range structures has a profound influence on groundwater and surface-water flow and quality in the entire region. Valley- and basin-fill aquifer systems are locally linked with respect to both surface and subsurface flow (Bryan 1938; King et al. 1971; Wilson et al. 1981; Nickerson and Myers 1993; Hawley and Kernodle 2000; Hawley et al. 2001). In the Las Cruces area and upstream, the entrenched Mesilla Valley of the Rio Grande provides an inter-basin connection for both surface-water and shallow-groundwater flow between the Jornada del Muerto and Mesilla Basins; while linkage for deeper groundwater flow is furnished by several "paleo-valleys" across a buried bedrock ridge east of the city.

1.5 HISTORY OF HYDROGEOLOGIC INVESTIGATIONS

1.5.1 Early Work

Major early sources of information on the geology and geohydrology of the Mesilla Basin area include reports by Hill (1900), Keyes (1905), Slichter (1905), Lee (1907), Richardson (1909), Dunham (1935), Bryan (1938) and Sayre and Livingston (1945). Slichter's investigation of the Mesilla Valley shallow-aquifer zone included a definitive study of underflow conditions through El Paso Narrows (Sections 4.3.1, 7.3). Lee (1907) developed the earliest model of ancestral Rio Grande evolution in the New Mexico region; and he emphasized the potential for locating a dam at the Elephant Butte site for irrigation-water storage and flood control.

5.0 HYDROGEOLOGIC FRAMEWORK OF THE AQUIFER SYSTEM

From a geohydrologic perspective, the Mesilla and southern Jornada Basins occupy broad topographic depressions that are separated as well as linked by the entrenched Mesilla and Rincon Valleys of the Rio Grande. Both topographic basins, in turn, overlie a geohydrologically linked group of deep structural subbasins and intervening buried-bedrock highs (Plate 1, Figs. 4-1, 4-2a,b). Both intrabasin and basin-boundary structures play a major role in terms of groundwater flow and geochemistry. Figure 5-1 is a schematic hydrogeologic cross-section of the south-central Mesilla Basin, and it is aligned approximately along the 32nd Parallel and close to the position of Figure 4-2b and Plate 4c. Basic concepts of hydrogeologic framework and groundwater flow in incompletely *closed* and *partly drained* intermontane-basin systems like the Mesilla Basin have been introduced in Sections 3.1 and 2.5 (Figs. 3-1 to 3-3; Tables 3-1 to 3-3).

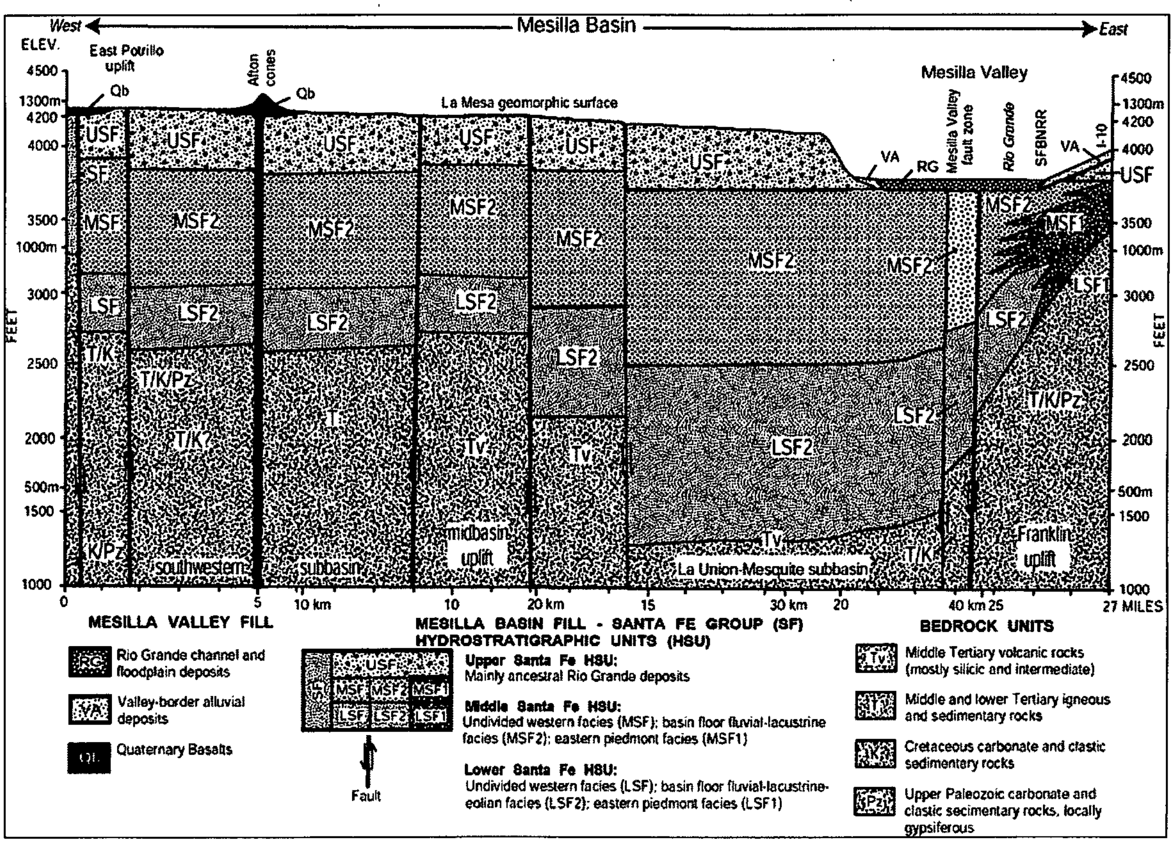

Figure 5-1. Schematic hydrogeologic cross section of the south-central Mesilla Basin near the 32nd Parallel in Doña Ana County, N M and El Paso County, TX, Vertical exaggeration about 10x. Modified from Plate 4c.

REFERENCE 18

aquifers of west texas

Report 356

edited by
Robert E. Mace
William F. Mullican III
Edward S. Angle

Texas Water Development Board

P.O. Box 13231, Capitol Station
Austin, Texas 78711-3231

December 2001

Texas Water Development Board

Report 356

Aquifers of West Texas

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Craig D. Pedersen, Executive Administrator

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Table of Contents

Chapter 7

The Mesilla Basin Aquifer System of New Mexico, West Texas, and Chihuahua—An Overview of Its Hydrogeologic Framework and Related Aspects of Groundwater Flow and Chemistry

John W. Hawley[1], John F. Kennedy[1], and Bobby J. Creel[1]

Introduction

Our brief overview of the hydrogeology and geohydrology of basin-fill aquifers in the Mesilla Basin (Bolson) covers a large area of south-central New Mexico and adjacent parts of western Texas and northern Chihuahua (figs. 7-1, 7-2). Emphasis is on the hydrogeologic framework of this major intermontane basin and the controls exerted by basin-fill stratigraphy and structure on the distribution of major aquifer zones, the groundwater-flow regime, and related aspects of water chemistry. The 1,100-mi^2 Mesilla Basin is near the southern end of the river-linked series of structural basins that form the Rio Grande rift (RGR) tectonic province (Keller and Cather, 1994). The RGR extends southward from the San Luis Basin, which is flanked by the southern Rocky Mountains, to at least as far south as the Hueco Bolson in the southeastern sector of the Basin and Range province (Hawley, 1978; 1986).

The broad structural depression that forms the Mesilla Basin is bounded on the east by the Organ-Franklin-Juarez Mountain chain, and its western border includes fault-block and volcanic uplands that extend northward from the East Potrillo Mountains and West Potrillo basalt field to the Aden and Sleeping Lady Hills (figs. 7-1, 7-2). The entrenched Mesilla Valley of the Rio Grande, which has a valley-floor area of about 215 mi^2, crosses the eastern part of the basin. The metropolitan areas of Las Cruces and northwestern El Paso-Ciudad Juarez are located, respectively, in the northern part and at the southern end of the Mesilla Valley. The Robledo and Doña Ana mountains bound the northern end of the valley, but the northeastern basin boundary is transitional with the Jornada del Muerto Basin (Seager and others, 1987). The southern basin-boundary with the Bolson de los Muertos in north-central Chihuahua has still not been studied in detail. Regional groundwater and surface flow is toward "El Paso del Norte," the topographic and structural gap between the Franklin Mountains and Sierra Juarez that separates the

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Mesilla Basin from the Hueco Bolson (fig. 7-2). Underflow contribution from the Jornada Basin is restricted by a buried bedrock high between the Doña Ana and Tortugas Mountains east of Las Cruces (King and others, 1971; Wilson and others, 1981; Woodward and Myers, 1997).

Background—Development of Basic Hydrogeologic and Geohydrologic Models

We open this discussion with a brief review of how the present conceptual model of basin hydrogeology has developed over the past century. In terms of modern concepts of groundwater flow in basin-fill aquifers, W. T. Lee (1907) and Kirk Bryan (1938) are the two most important early workers to characterize the Rio Grande Valley and RGR region between Colorado and Trans-Pecos Texas. However, we must note here that the contributions of Lee and Bryan are just one product of the great amount of cross-fertilization of geological and hydrological concepts that occurred throughout the American Southwest during the late 19th and early 20th centuries. Very important contributions by contemporary workers include Hill (1896, 1900), Slichter (1905), Richardson (1909), Tolman (1909, 1937), Meinzer and Hare (1915), Darton (1916), Schwennesen (1918), Dunham (1935), Theis (1938), and Sayre and Livingston (1945).

Lee (1907) developed an early scenario for evolution of the Rio Grande Valley system in New Mexico and emphasized the potential for building a large dam at the Elephant Butte site for irrigation water storage. Bryan's (1938) most significant hydrogeologic contributions include development of the earliest synoptic models of the RGR structural province (his "Rio Grande depression") and evolution of the northern Rio Grande fluvial system. He observed that (1) the main body of sedimentary deposits of the Rio Grande depression, from the north end of the San Luis valley to and beyond El Paso, is considered to be the same general age and to belong to the Santa Fe Formation (p. 205); (2) in general, the basins appear to have been elongated into ovals and to be divisible into two major types— basins with a through-flowing river and basins with enclosed drainage (p. 205); and, (3) [Rio Grande depression basins] differ from other basins [in the Basin and Range province] principally in being strung like beads on a string along the line of the Rio Grande (p. 221).

On the basis of observations in adjacent parts of Mexico and the American Southwest, Tolman (1909, 1937) also made a major contribution in developing a better definition of the fundamental hydrogeologic distinction between depositional systems in aggrading intermontane basins with topographic closure (bolsons) and those that are open in terms of both surface and subsurface flow (semibolsons). Both Bryan and Tolman recognized three basic classes of lithofacies assemblages in this continuum of closed and open basin landforms. Piedmont-slope facies (e.g., alluvial-fan) are present along the margins of both basin types, while basin floors in closed systems include alluvial flats that grade to terminal, playa-lake plains. Floors of basins that are integrated with surface-flow systems, in marked contrast, include alluvial flats and fluvial plains that grade to basin outlets.

faults and lithofacies distribution patterns (depending, of course, on existing flow gradients). Fault zones and fine-grained facies commonly form effective barriers to interbasin flow. However, a small amount of flow may enter or leave the basin at low barrier points associated with zones of relatively high permeability.

The Mesilla Basin aquifer system comprises three major hydrostratigraphic subdivisions (HSU's) of the Santa Fe Group (Hawley and others, 1969; Hawley, 1978, charts 1 and 2). These units are ordered in upper to lower (younger to older) stratigraphic sequence (fig. 7-6). The upper Santa Fe unit (USF1,2) is generally correlative with the Camp Rice Formation (fig. 7-6), and its most productive aquifer zone consists of ancestral Rio Grande channel sand and gravel (HSU-USF2). However, the lower part of this unit is only saturated in the northeastern basin area near Las Cruces (Hawley and Lozinsky, 1992). The middle Santa Fe unit (MSF1,2) correlates with much of the Fort Hancock Formation in the Hueco Bolson, which is dominated by fine-grained, alluvial-flat, and playa-lake sediments. In the Mesilla Basin, however, the dominant facies assemblage (MSF2) includes extensive layers of clean sand that are interbedded with silty clay. The middle unit is less permeable than the upper unit because of a greater degree of cementation and the widespread presence of the fine-grained interbeds. HSU-MSF2, however, probably forms the major aquifer zone in the basin because it is almost entirely below the water table. The long-recognized "medial aquifer" zone of Leggat and others (1962) below the southern Mesilla Valley forms part of this unit (Cliett, 1969).

The lower Santa Fe unit (LSF) is primarily fine grained and party consolidated throughout much of the basin, and it only forms a significant part of the aquifer system in the lower Mesilla Valley area that extends from near Mesquite, New Mexico to Canutillo, Texas and La Union, New Mexico. This LSF unit was first identified in the El Paso Water Utilities-Canutillo well field by Leggat and others (1962) and was informally named the "deep aquifer" zone (HSU-LSF 2, fig. 7-6). The major component of the zone is a distinctive eolian-sand facies (LFA 4) that intertongues mountainward with piedmont fanglomerates (LFA's 7-8) and basinward with basin-floor facies assemblages (LFA's 3, 9 and 10?). The latter facies are here interpreted as fluvial-deltaic and playa-lake deposits (fig. 7-5, table 7-1). The sand facies is locally as much as 600 ft thick, and its base ranges from 1,000 to 1,500 ft below the Mesilla Valley floor. This extensive basin-floor to distal piedmont-slope deposit is interpreted as a buried dune field with an extent and thickness similar to that of *los Médanos de Samalayuca* dune complex in north-central Chihuahua (Cliett, 1969; Schmidt and Marston, 1981; Wilson and others, 1981; Hawley and Lozinsky, 1992).

Concluding Comments on Groundwater Flow and Quality Conditions

The near-surface components (general elevation and direction) of the groundwater-flow system are shown on figure 7-2. Hydraulic conditions range from unconfined to semiconfined to confined in most basin-fill aquifer zones. In the central part of the basin west of the Mesilla Valley, which is designated the West Mesa in many reports, a transmissivity of 5,900 ft^2/d was calculated for a well screened at selected depth intervals between 710 and 1,210 ft. In the northern part of the West Mesa area, aquifer transmissivity was estimated to be 10,000 ft^2/d, with a (confined) storage coefficient of 2×10^{-5}. According to aquifer tests, maximum values of transmissivity in the central Mesilla Basin ranged from 10,900 to 40,000 ft^2/d. The average horizontal hydraulic conductivity was 67 ft/d. This range in values, however, is probably only representative of the upper to middle parts of the Santa Fe Group aquifer system because these aquifer tests also provided evidence that the horizontal hydraulic conductivity decreases with depth. Vertical hydraulic conductivity values were found to range from 0.21 ft/d to 3.0 ft/d for the entire thickness of the confining layers at the aquifer-test sites.

Because of the limited scope of this paper, only a few comments on groundwater quality can be made. Water quality in the upper Santa Fe unit (HSU-USF2) in the eastern part of the basin generally reflects groundwater chemistry in the shallow valley-fill aquifer (HSU-RG) because this unit is the most significant recharge source for the upper part of the basin-fill aquifer system. Much of the groundwater pumped for irrigation is derived from the unconfined to semiconfined part of the (shallow) aquifer system that includes the river-valley fill (RG) and contiguous parts of HSU's USF2 and MSF2. A major influence on basinwide spatial variability in quality is due to irregular distribution patterns of fine-grained confining zones. Water in the middle Santa Fe unit (MSF2) is generally of better quality than in overlying valley-fill and basin-fill units, particularly in the northern part of the basin. Near the basin's southern end, however, available information indicates a significant deterioration in groundwater quality. The middle unit is the most heavily developed aquifer zone in terms of public and private drinking-water production. Water quality in the lower Santa Fe unit (LSF) is generally poorer than the middle unit except beneath the Mesilla Valley area between Mesquite and Canutillo. The majority of the discharge from the lower Santa Fe unit occurs as municipal and industrial pumping in the Anthony to Canutillo, Texas, area.

On the basis of review of data in the Frenzel and Kaehler (1992) groundwater-flow model, Balleau (1999, p. 46) estimated that about 14 million acre-ft of available water is stored in the upper 100 ft of saturated basin fill in the West Mesa area (~ 360,000 acres in New Mexico). This value is about twice our estimate, which assumes an effective aquifer porosity of 20 percent. Because saturated parts of HSU's USF2 and MSF2 in the West Mesa area range up to 1,000 ft in thickness, there is an enormous amount of potable to slightly saline groundwater stored in this part of the basin. Available fresh to slightly saline water stored in the upper 1,000 ft of Santa Fe Group hydrostratigraphic units, much of it very old, is probably no more than 100×10^6 acre-ft. Moreover, it has probably not been effectively recharged during the past 10,000 to 15,000 yr, except in areas contiguous to major streams.

The majority of recharge occurs through mountain-front mechanisms and through vertical groundwater flow from river-valley fill that forms the "shallow" alluvial aquifer. Except for a few perennial springs and seeps and short reaches of intermittent mountain streams, there are no permanent surface-water bodies in the small highland watersheds that flank the Mesilla Basin. Mountain-front recharge is, therefore, very low; and losing reaches of the Rio Grande channel and associated irrigation-canal systems are the major present sources of groundwater replenishment. Annual aquifer recharge in the 1,100-mi^2Mesilla Basin, exclusive of the 215-mi^2 Mesilla Valley area, is probably less than 10,000 acre-ft.

REFERENCE 19

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RECEIVED
JUL 21 2006
PETROLEUM STO... TANK BUREAU

July 20, 2006

Mr. Gary Moore
Sharp Oil Company
7522 El Morro Road NE
Albuquerque, New Mexico 87109

Subject: Fourth Quarterly Groundwater Monitoring Report at the Sharp Oil Company North Main Self-Serve Site Located at 1875 North Main Street, Las Cruces, New Mexico
CDM Project No. 17347-47189-MON.REPT
NMED Facility No. 30518
WPID No. 14007

Dear Mr. Moore:

On behalf of Sharp Oil Company (Sharp), Camp Dresser & McKee Inc. (CDM) conducted a quarterly monitoring event at the above-referenced site on June 29, 2006. CDM performed groundwater gauging and sampling at site-related monitoring wells at the Scott's Auto Sales and North Main Self-Serve sites. The activities reported herein were conducted in accordance with the CDM work plan proposal dated August 26, 2005, with New Mexico Environment Department (NMED) approval received September 9, 2005.

The report includes a site status summary with recommendations, an aerial photo site map, a groundwater elevation contour map, a groundwater contaminant concentration map, a non-aqueous phase liquid (NAPL) apparent thickness contour map and cumulative water level and laboratory analytical tables.

Please contact CDM at (505) 243-3200 with any inquiries regarding the contents of this submittal.

Sincerely,

C. Tyler Irwin

C. Tyler Irwin, C.P.G.
Project Manager
Camp Dresser & McKee Inc.

for Charlotte Salazar
Staff Engineer
Camp Dresser & McKee Inc.

cc: Chris Holmes, PSTB
File

Sharp Oil Company
North Main Self-Serve and Scott's Auto Sales
Las Cruces, New Mexico
Fourth Quarter Report

SITE STATUS SUMMARY

- At the request of the NMED, positions of monitoring wells and locations of buildings and the other structures were checked with a surveyor's wheel during the June 29, 2006 monitoring event (Figure 1).
- Twenty site monitoring wells (Sharp MW-1 through MW-11; Scott's MW-1, MW-2, MW-3, MW-6, MW-7, MW-9, MW-11 and MW-13; and the Jack Key monitoring well) were gauged on June 29, 2006. Groundwater elevations have decreased on average 0.56 foot since the previous gauging event. A summary of groundwater elevation data is included as Table 1 and a Groundwater Elevation Contour Map is provided as Figure 2.
- The direction of groundwater flow is generally to the southeast at a calculated gradient of 0.002 foot per foot.
- NAPL was detected in Sharp wells MW-1, MW-3, MW-4, MW-7, and in Scott's wells MW-1, MW-2 and MW-3 during the June 2006 sampling event. NAPL thickness ranged from 0.01 foot to 1.23 feet. NAPL measurements are included in Table 1 and an Apparent NAPL Thickness Map is presented in Figure 3.
- NAPL was hand-bailed by CDM's subcontractor, Precision Engineering Inc. (PEI), from Sharp wells MW-2, MW-4, and MW-7, and from Scott's well MW-2. NAPL thickness was reduced to less than 0.01 foot in these wells on April 25, May 19, and June 16, 2006. To date, 7.88 liters of NAPL have been hand-bailed from site wells as part of the current work plan. Logs of NAPL recovery events were electronically mailed to the NMED on July 5, 2006 and are also attached to this report.
- Six site wells (Sharp MW-8 through MW-11; Scott's MW-9 and MW-13) were sampled on June 29, 2006 (Scott's well MW-9 was substituted for Scott's MW-1 which contained NAPL). Collected groundwater samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tertiary butyl ether (MTBE), 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), total naphthalenes, and other compounds by EPA Test Method 8260 PBMS. The laboratory analyses report is attached to this report.
- Benzene in wells Sharp MW-10 and Sharp MW-11 exceeds the applicable State standard. Other BTEX compounds in these wells occur below applicable State standards. BTEX in well Sharp MW-9 occurs below applicable State standards. BTEX compounds in wells Sharp MW-8, Scott's MW-9, and Scott's MW-13 occur near or below laboratory detection limits.
- Concentrations of MTBE in all sampled wells occur below laboratory detection limits.
- The concentration of total naphthalenes in Sharp MW-10 exceeds the applicable State standard.

RECOMMENDATIONS

- CDM recommends that NAPL recovery and quarterly monitoring be continued to observe changes in groundwater quality.

Table 1 Sharp Oil Company North Main Self-Serve and Scott's Auto Sales Summary of Groundwater Elevation Data (all data in feet)

Monitoring Well Location*	Date	Top of Casing Elevation (A)	Depth to Product (B)	Depth to Water (C)	NAPL Thickness**	Groundwater Elevation (D)
Sharp MW-1	02/14/02	3908.14	--	36.62	--	3871.52
	08/15/02		--	36.73	--	3871.41
	03/13/03		--	37.04	--	3871.10
	06/05/03		--	37.69	--	3870.45
	09/09/03		37.87	39.35	1.48	3869.96
	12/08/03		38.50	38.86	0.36	3869.56
	6/25/04		39.43	39.61	0.18	3868.67
	2/23/05		40.04	40.08	0.04	3868.09
	6/16/05		40.23	40.25	0.02	3867.91
	10/5/05		--	39.88	--	3868.26
	12/22/05		--	40.13	--	3868.01
	3/7/06		--	40.33	--	3867.81
	6/29/06		40.89	40.90	0.01	3867.25
Sharp MW-2	02/14/02	3908.37	--	37.08	--	3871.29
	08/15/02		--	37.23	--	3871.14
	03/14/03		37.25	38.54	1.29	3870.85
	06/05/03		38.10	38.38	0.28	3870.21
	09/09/03		38.20	40.25	2.05	3869.74
	12/08/03		38.80	39.42	0.62	3869.44
	6/25/04		39.81	40.26	0.45	3868.47
	2/23/05		NM	NM	--	NM
	6/16/05		40.64	40.72	0.08	3867.71
	10/5/05		40.17	40.83	0.66	3868.06
	12/22/05		40.55	40.57	0.02	3867.82
	3/7/06		40.77	40.79	0.02	3867.60
	6/29/06		--	41.31	--	3867.06
Sharp MW-3	02/14/02	3908.61	37.09	37.41	0.32	3871.77
	08/15/02		37.14	37.67	0.55	3871.35
	03/13/03		37.33	38.55	1.22	3871.02
	06/05/03		38.19	38.50	0.31	3870.35
	09/09/03		38.35	40.02	1.67	3869.91
	12/08/03		38.71	40.44	1.73	3869.54
	6/25/04		39.86	40.51	0.65	3868.61
	2/23/05		40.14	40.22	0.08	3868.45
	6/16/05		40.71	40.96	0.25	3867.85
	10/5/05		40.38	40.45	0.07	3868.22
	12/22/05		40.61	40.62	0.01	3868.00
	3/7/06		40.83	40.94	0.11	3867.76
	6/29/06		41.36	41.58	0.22	3867.20
Sharp MW-4	02/14/02	3909.53	37.97	38.37	0.40	3871.48
	08/15/02		38.08	38.47	0.39	3871.37
	03/13/03		38.28	39.17	0.89	3871.06
	06/05/03		38.84	40.23	1.39	3870.40
	09/09/03		39.29	40.79	1.50	3869.93
	12/08/03		39.65	41.22	1.57	3869.55

Table 1 Sharp Oil Company North Main Self-Serve and Scott's Auto Sales Summary of Groundwater Elevation Data (all data in feet)

Monitoring Well Location*	Date	Top of Casing Elevation (A)	Depth to Product (B)	Depth to Water (C)	NAPL Thickness**	Groundwater Elevation (D)
Sharp MW-4	6/25/04	3909.53	40.55	42.15	1.60	3868.64
	2/23/05		40.81	42.08	1.27	3868.45
	6/16/05		41.50	42.31	0.81	3867.86
	10/5/05		41.11	42.04	0.93	3868.22
	12/22/05		41.41	42.12	0.71	3867.97
	3/7/06		41.73	41.92	0.19	3867.76
	6/29/06		42.05	43.28	1.23	3867.22
Sharp MW-5	02/14/02	3908.76	--	37.06	--	3871.70
	08/15/02		--	37.18	--	3871.58
	03/13/03		--	37.49	--	3871.27
	06/05/03		--	38.13	--	3870.63
	09/09/03		--	38.65	--	3870.11
	12/08/03		--	39.00	--	3869.76
	6/25/04		39.85	40.27	0.42	3868.82
	2/23/05		--	40.13	--	3868.63
	6/16/05		40.69	40.74	0.05	3868.06
	10/5/05		--	40.35	--	3868.41
	12/22/05		40.56	40.57	0.01	3868.20
	3/7/06		--	40.81	--	3867.95
	6/29/06		--	41.34	--	3867.42
Sharp MW-6	08/15/02	3909.72	--	38.28	--	3871.44
	03/13/03		--	NM	--	NM
	06/05/03		--	39.22	--	3870.50
	09/09/03		--	39.74	--	3869.98
	12/08/03		--	40.09	--	3869.63
	6/25/04		--	41.03	--	3868.69
	2/23/05		--	41.21	--	3868.51
	6/16/05		--	41.79	--	3867.93
	10/5/05		--	41.45	--	3868.27
	12/22/05		--	41.67	--	3868.05
	3/7/06		--	41.89	--	3867.83
	6/29/06		--	42.44	--	3867.28
Sharp MW-7	06/05/03	NM	38.81	39.96	1.15	NM
	09/09/03		39.18	40.81	1.63	NM
	12/08/03		39.53	41.24	1.71	NM
	6/25/04		40.40	42.34	1.94	NM
	2/23/05		40.85	41.55	0.70	NM
	6/16/05	3909.40	41.29	42.67	1.38	3867.82
	10/5/05		41.03	41.95	0.92	3868.18
	12/22/05		41.45	41.54	0.09	3867.93
	3/7/06		41.67	41.76	0.09	3867.71
	6/29/06		42.23	42.31	0.08	3867.15
Sharp MW-8	6/16/05	3909.55	--	41.83	--	3867.72
	10/5/05		--	41.46	--	3868.09
	12/22/05		--	41.71	--	3867.84
	3/7/06		--	41.93	--	3867.62
	6/29/06		--	42.50	--	3867.05

Table 1 Sharp Oil Company North Main Self-Serve and Scott's Auto Sales Summary of Groundwater Elevation Data (all data in feet)

Monitoring Well Location*	Date	Top of Casing Elevation (A)	Depth to Product (B)	Depth to Water (C)	NAPL Thickness**	Groundwater Elevation (D)
Sharp MW-9	6/16/05	3908.61	--	40.97	--	3867.64
	10/5/05		--	40.59	--	3868.02
	12/22/05		--	40.87	--	3867.74
	3/7/06		--	41.07	--	3867.54
	6/29/06		--	41.64	--	3866.97
Sharp MW-10	6/16/05	3908.11	--	40.58	--	3867.53
	10/5/05		--	40.20	--	3867.91
	12/22/05		--	40.48	--	3867.63
	3/7/06		--	40.71	--	3867.40
	6/29/06		--	41.27	--	3866.84
Sharp MW-11	6/16/05	3908.00	--	40.55	--	3867.45
	10/5/05		--	40.08	--	3867.92
	12/22/05		--	40.46	--	3867.54
	3/7/06		--	40.69	--	3867.31
	6/29/06		--	41.24	--	3866.76
Scott's MW-1	03/14/03	3907.59	--	36.80	--	3870.79
	06/05/03		--	37.44	--	3870.15
	09/09/03		--	37.93	--	3869.66
	12/08/03		38.03	39.33	1.30	3869.29
	6/25/04		39.15	39.28	0.13	3868.41
	2/23/05		39.34	39.36	0.02	3868.25
	6/16/05		39.94	39.99	0.05	3867.64
	10/5/05		--	39.57	--	3868.02
	12/22/05		--	39.86	--	3867.73
	3/7/06		40.06	40.16	0.10	3867.51
	6/29/06		40.60	40.77	0.17	3866.95
Scott's MW-2	03/14/03	NM	36.51	37.89	1.38	NM
	06/05/03		37.09	38.68	1.59	NM
	09/09/03		37.80	38.03	0.23	NM
	12/08/03		38.07	38.81	0.74	NM
	6/25/04		39.08	39.22	0.14	NM
	2/23/05		--	39.28	--	NM
	6/16/05	3907.56	39.81	40.06	0.25	3867.70
	10/5/05		39.43	39.80	0.37	3868.05
	12/22/05		39.78	39.80	0.02	3867.78
	3/7/06		39.98	40.02	0.04	3867.57
	6/29/06		40.53	40.59	0.06	3867.02
Scott's MW-3	03/14/03	3907.44	--	36.78	--	3870.66
	06/05/03		--	37.43	--	3870.01
	09/09/03		37.88	38.02	0.14	3869.53
	12/08/03		38.25	38.45	0.20	3869.15
	6/25/04		39.14	39.17	0.03	3868.29
	2/23/05		--	39.32	--	3868.12
	6/16/05		--	39.93	--	3867.51
	10/5/05		--	39.55		3867.89
	12/22/05		39.85	39.86	0.01	3867.59
	3/7/06		40.06	40.08	0.02	3867.38
	6/29/06		40.61	40.62	0.01	3866.83

Table 1 Sharp Oil Company North Main Self-Serve and Scott's Auto Sales Summary of Groundwater Elevation Data (all data in feet)

Monitoring Well Location*	Date	Top of Casing Elevation (A)	Depth to Product (B)	Depth to Water (C)	NAPL Thickness**	Groundwater Elevation (D)
Scott's MW-6	03/13/03	3908.59	--	36.19	--	3872.40
	06/05/03		--	36.83	--	3871.76
	09/09/03		--	37.34	--	3871.25
	12/08/03		--	37.69	--	3870.90
	6/25/04		--	38.63	--	3869.96
	2/23/05		--	38.31	--	3870.28
	6/16/05		DRY			
	10/5/05		--	39.04	--	3869.55
	12/22/05		DRY			
	3/7/06		DRY			
	6/29/06		DRY			
Scott's MW-7	03/14/03	3903.58	--	32.70	--	3870.88
	06/05/03		--	33.38	--	3870.20
	09/09/03		--	33.78	--	3869.80
	12/08/03		--	33.84	--	3869.74
	6/25/04		--	34.05	--	3869.53
	2/23/05		--	34.08	--	3869.50
	6/16/05		--	34.09	--	3869.49
	10/5/05		--	34.09	--	3869.49
	12/22/05		--	34.09	--	3869.49
	3/7/06		DRY			
	6/29/06		DRY			
Scott's MW-9	03/14/03	3904.23	--	33.95	--	3870.28
	06/05/03		--	34.54	--	3869.69
	09/09/03		--	35.03	--	3869.20
	12/08/03		--	35.39	--	3868.84
	6/25/04		--	36.26	--	3867.97
	2/23/05		--	36.40	--	3867.83
	6/16/05		--	37.03	--	3867.20
	10/5/05		--	36.65	--	3867.58
	12/22/05		--	37.00	--	3867.23
	3/7/06		--	37.21	--	3867.02
	6/29/06		--	37.79	--	3866.44
Scott's MW-11	03/14/03	3906.47	--	NM	--	NM
	06/05/03		--	36.80	--	3869.67
	09/09/03		--	37.27		3869.20
	12/08/03		--	37.62	--	3868.85
	6/25/04		--	38.48	--	3867.99
	2/23/05		--	38.63	--	3867.84
	6/16/05		--	39.26	--	3867.21
	10/5/05		DRY			
	12/22/05		DRY			
	3/7/06		DRY			
	6/29/06		DRY			

Table 1 Sharp Oil Company North Main Self-Serve and Scott's Auto Sales Summary of Groundwater Elevation Data (all data in feet)

Monitoring Well Location*	Date	Top of Casing Elevation (A)	Depth to Product (B)	Depth to Water (C)	NAPL Thickness**	Groundwater Elevation (D)
Scott's MW-13	06/05/03	NM	--	37.48	--	NM
	09/09/03		37.93	38.07	0.14	NM
	12/08/03		38.30	38.44	0.14	NM
	6/25/04		39.21	39.23	0.02	NM
	2/23/05		--	39.39	--	NM
	6/16/05	3907.66	--	39.99	--	3867.67
	10/5/05		--	39.62	--	3868.04
	12/22/05		--	39.89	--	3867.77
	3/7/06		--	40.10	--	3867.56
	6/29/06		--	40.66	--	3867.00
Bar-F BF-22-2	03/13/03	3908.80	--	37.85	--	3870.95
	06/05/03		--	38.53	--	3870.27
	09/09/03		38.65	39.26	0.61	3870.02
	12/08/03		39.02	39.31	0.29	3869.72
	6/25/04		39.25	39.31	0.06	3869.54
	12/2004	PLUGGED AND ABANDONED				
Bar-F BF-22-3	03/14/03	3908.24	--	37.42	--	3770.82
	06/05/03		38.14	38.18	0.04	3870.09
	09/09/03		38.16	39.48	1.32	3869.80
	12/08/03		38.55	39.45	0.90	3869.50
	6/25/04		39.42	39.55	0.13	3868.79
	12/2004	PLUGGED AND ABANDONED				
Bar-F BF-22-4	03/13/03	3908.89	--	38.18	--	3870.71
	12/2004	PLUGGED AND ABANDONED				
Bar-F BF-22-5	03/14/03	3909.43	--	38.74	--	3870.69
	12/2004	PLUGGED AND ABANDONED				
Bar-F BF-22-6	03/13/03	3909.29	--	38.57	--	3870.72
	06/05/03		38.78 +	NM	--	NM
	09/09/03		--	DRY	--	--
	12/08/03		--	DRY	--	--
	6/25/04		--	DRY	--	--
	12/2004	PLUGGED AND ABANDONED				
Bar-F BF-22-7	03/13/03	3908.15	--	37.68	--	3870.47
	06/05/03		--	38.22	--	3869.93
	09/09/03		38.23	39.30	1.07	3869.70
	12/08/03		38.64	39.30	0.66	3869.37
	6/25/04		--	DRY	--	--
	12/2004	PLUGGED AND ABANDONED				
Bar-F BF-22-8	03/14/03	3909.01	--	NM	--	NM
	12/2004	PLUGGED AND ABANDONED				
Bar-F BF-22-9	03/14/03	3909.44	--	NM	--	NM
	12/2004	PLUGGED AND ABANDONED				
Jack Key Well	06/05/03	NM	--	37.99	--	NM
	09/09/03		--	38.47	--	NM
	12/08/03		--	38.84	--	NM
	6/25/04		--	39.67	--	NM

Table 1 Sharp Oil Company North Main Self-Serve and Scott's Auto Sales Summary of Groundwater Elevation Data (all data in feet)

Monitoring Well Location*	Date	Top of Casing Elevation (A)	Depth to Product (B)	Depth to Water (C)	NAPL Thickness**	Groundwater Elevation (D)
Jack Key Well	2/23/05	NM	--	39.77	--	--
	6/16/05		--	40.44	--	--
	10/5/05		--	40.00	--	--
	12/22/05		--	40.39	--	--
	3/7/06		--	40.62	--	--
	6/29/06		--	41.12	--	--

Notes:
NM: Not Measured.
* Monitoring Well Designation:
Sharp = Sharp Oil Company North Main Self Serve
Scott's = Scott's Auto Sales (Scott's MW-11 located across Main Street on Jack Key Dealership property)
**NAPL: Non-aqueous-phase liquid.
If NAPL is present, Groundwater Elevation is calculated using the following formula:
$D = (A-C) + 0.79(C-B)$
+: No water encountered before reaching bottom of well at 39.00 feet.

REFERENCE 20

Water Quality in the Rio Grande Valley, Colorado, New Mexico, and Texas, 1992-95

By Gary W. Levings, Denis F. Healy, Steven F. Richey, and Lisa F. Carter

U.S. GEOLOGICAL SURVEY CIRCULAR 1162

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Table 1.—Rio Grande Valley Study Unit Basic Fixed Sites

[Main-stem sites shown in blue]

Site number	Station name
1	Rio Grande near Del Norte, Colo.
2	Saguache Creek near Saguache, Colo.
3	Medano Creek near Mosca, Colo.
4	Rio Grande above mouth of Trinchera Creek, near Lasauses, Colo.
5	Conejos River near Lasauses, Colo.
6	Rio Grande near Lobatos, Colo.
7	Rio Grande below Taos Junction Bridge, near Taos, N. Mex.
8	Rio Chama near Chamita, N. Mex.
9	Rio Grande at Otowi Bridge near San Ildefonso, N. Mex.
10	Rito de los Frijoles in Bandelier National Monument, N. Mex.
11	Santa Fe River above Cochiti Lake, N. Mex.
12	Rio Grande at Isleta, N. Mex.
13	Rio Puerco near Bernardo, N. Mex.
14	Rio Grande Conveyance Channel at San Marcial, N. Mex.
15	Rio Grande Floodway at San Marcial, N. Mex.
Mesilla Valley 16	Rio Grande below Leasburg Dam near Leasburg, N. Mex.
17	Rio Grande at El Paso, Tex.

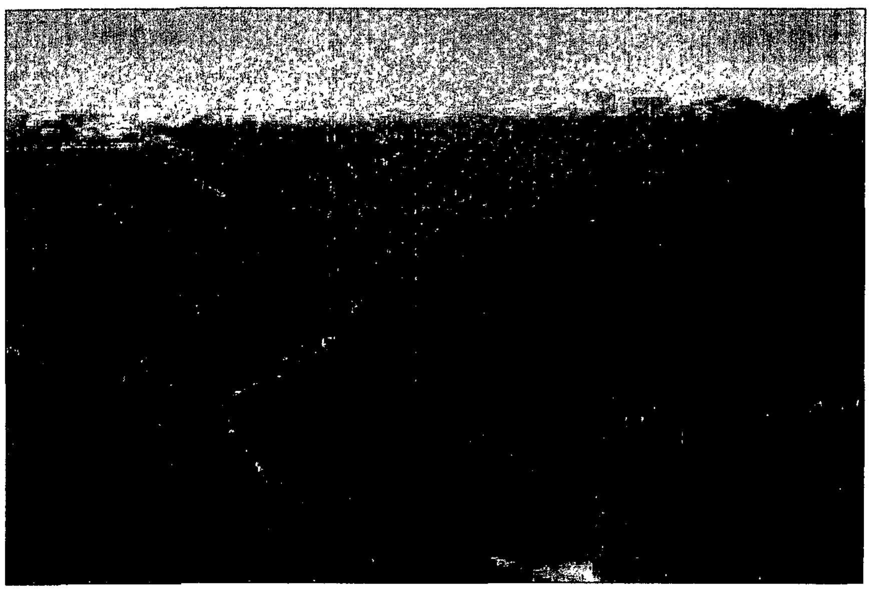
Texas. One land-use study was conducted in the basin-fill deposits in the San Luis Valley in Colorado. Only when the hydrologic system along the Rio Grande is understood can the complexity of the many influences that affect water quality throughout the Study Unit be appreciated. A detailed discussion of the ground-water system in the Study Unit is presented in Ellis and others (1993). The following is a brief description of the ground-water system to aid in understanding the following water-quality discussions.

Complex interactions occur between ground water and surface water in the Rio Grande flood plain. A system of canals distributes surface water for agricultural irrigation and a system of drains intercepts shallow ground water and returns it to the Rio Grande. Surface water leaks from the Rio Grande and canals to recharge the shallow ground-water system. In places, deeper ground water flows upward to recharge the shallow ground-water system and/or to contribute flow to the Rio Grande. In addition, excess applied irrigation water infiltrates and recharges the shallow ground-water system. Evapotranspiration losses from vegetation, land, and water surfaces, can have a major effect on the quality of ground water.

Two land-use studies, in the Albuquerque area and in the Rincon Valley, focused on the upper 10-15 feet of ground water in the flood-plain alluvium (referred to as shallow ground water in this report). This water generally is not used for domestic supply. However, because of the interaction with surface water and, in isolated areas, because declines in the water level in the deeper aquifer have caused the shallow aquifer to be a recharge source in some areas, knowing the quality of the shallow ground water is important in making management decisions.

The aquifer subunit survey, from Cochiti Lake to El Paso, focused on deeper water underlying the flood-plain (referred to as deeper ground water in this report). This water is used for domestic supply in some areas.

The land-use study in the San Luis Valley was not entirely in the Rio Grande flood plain. Most of the area is in the San Luis Closed Basin, which is both a ground-water and surface-water closed basin. Neither ground water nor surface water flows out of the Closed Basin. The shallow ground water is in unconsolidated basin-fill deposits. The water in these basin-fill deposits is used extensively for irrigation and, on a limited basis, for domestic supply. However, these wells generally tap several tens of feet of the aquifer. The study wells were completed in the upper 10-15 feet of the saturated basin-fill deposits.



Rio Grande Reservoir, in the headwaters of the Rio Grande, is used to store runoff for irrigation at surface-water diversions in the San Luis Valley (photograph by Sherman R. Ellis, U.S. Geological Survey).

REFERENCE 21

Regional Water Plan

- Cost of Service Analysis Water, Wastewater, Solid Waste and Gas: Final Report to the City of Las Cruces (PDF, 1.9 MB)
- Water Quality Report
- East Mesa Reclamation Project
- Draft Environmental Impact Statement (External Site)
- Recycle Las Cruces - A Printable Brochure in PDF format

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and indicates the susceptibility of our water system to contamination. Because we pump water from a deep aquifer the likelihood of this kind of contamination is low, but it can occur under some circumstances and must be evaluated.

Source Water Assessment and Assessment and Protection Program (SWAPP)
The City of Las Cruces, Water System is well maintained and operated, and sources of drinking water are generally protected from potential sources of contamination based on well construction, hydro geologic settings, and system operations and management. The susceptibility rank of the entire water system is **Moderately high** please contact the city Water Resources Section of Utilities to discuss the findings of the SWAPP report.

The List of What Is in Your Water

Regulated Contaminants

The table (below) presents a summary of results of water testing done by NMED Drinking Water Bureau and by the City during the 2005 calendar year. Detected contaminants from 2002 and 2003 are also listed, if not sampled in 2004. The table contains the name of each contaminant, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the highest amount detected in **all samples taken**, the expected sources of such contamination, and the incidence of violations.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below, which there is no known or expected risk to health, i.e. zero risk. The MCL usually accepts a risk of 1 in 1,000,000 or 1 in 100,000 persons.
Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that the water supply system must follow.

Key to units: **ppm** = parts per million, or milligrams per liter (mg/L)
ppb = parts per billion, or micrograms per liter (μg/L)
pCi/L = picocuries per liter (a measure of radioactivity)

Test Results

Microbiological Contaminants						
Contaminant	Units	MCL	MCLG	Highest Detected Levels [1]	Major Sources	Violations
Total Coliform		48	0	2*	Naturally present in the environment	None
***Number of positives from a total of 710 samples. Up to 48 positive samples allowed by MCL.**						
Inorganic Contaminants (2005)						

Contaminant	Units	MCL	MCLG	Highest Detected Levels [1]	Major Sources	Violations
Arsenic	ppb	10	0	4.7	Erosion of natural deposits	None
Barium	ppb	2000	2000	117	Erosion of natural deposits	None
Chromium	ppb	100	100	6.1	Erosion of natural deposits	None
Fluoride	ppm	4	4	1.19	Erosion of natural deposits	None
Nickel [2]	ppb	100	-	5.93	Erosion of natural deposits	None
Nitrate/Nitrite	ppm	10	10	5.82	Leaching from septic tanks, Erosion of natural deposits	None
Selenium	ppb	50	50	14.4	Erosion of natural deposits	None
Thallium	ppb	2	0.5	0.20	Unknown	None

[1] The Highest Detected Level is the highest amount found among all samples taken.
[2] The State of New Mexico has an MCL for Nickel at 100 ppb, but has not adopted an MCLG.

Radioactive Contaminants

Contaminant	Units	MCL	MCLG	Highest Detected Levels [1]	Major Sources	Violations
Alpha emitters	pCi/L	15	0	15.2	Erosion of natural deposits	yes
Radium 228	pCi/L	5	0	3.04	Erosion of natural deposits	None
Uranium	ppb	30	0	132	Erosion of natural deposits	Yes

Volatile Organic Contaminants

Contaminant	Units	MCL	MCLG	Highest Detected Levels [1]	Major Sources	Violations
Tetrachloroethylene	ppb	5	0	4.9	Under investigation by EPA	None
Trihalomethanes	ppb	80	0	45.2	By-products of chlorinated drinking water	None
Haloacetic Acids	ppb	60	30	8.8	By-products of chlorinated drinking water	None

Trichloroethylene	ppm	5	0	.682	Breakdown product of PCE	None
Di(2-ethylhexyl)-phtalate	ppm	6	0	5.06	Plasticizer for PVC	None

Lead and Copper Rule (2003)					
Parameter	Units	Action level (AL)	90th % tile	Major Sources	Required
Copper [3]	ppb	1300	203	Corrosion of household plumbing systems, erosion of natural deposits	None
Lead [4]	ppb	15	8.7	Corrosion of household plumbing systems, erosion of natural deposits	None
[3] There is no MCL for Copper. None of the 30 sampled sites exceeded the Action Level. [4] There is no MCL for Lead. None of the 30 sampled sites exceeded the Action Level.					

Concerning Lead and Copper

Lead in our source water is less than 10 ppb; copper is less than 250 ppb. Because of the low occurrence of lead and copper, the City is required to sample once every three years (the minimum monitoring required). The Action Level (AL) triggers required measures when more than 10% of the sites sampled exceed the AL. Sampling has been done at homes built during 1983-86. These homes are in the category of higher risk because some materials used in plumbing during this period may leach these metals. Homes built after this period do not have this potential problem because changes in building codes eliminated the source materials. Sufficient leaching or corrosion has occurred to no longer be a problem in homes before this period.

Infants and young children are typically more vulnerable to lead in drinking water than the general population. Lead or copper levels at your home may be higher than at other homes in our community as a result of materials used in your home's plumbing. If you are concerned about possible elevated levels at your home, you may want to have your water tested by the Drinking Water and Community Services Bureau, NMED District Office in Las Cruces.

Arsenic

While your drinking water meets EPA's standard for Arsenic, it does contain low levels of Arsenic. EPA's standard balances the current understanding of Arsenic's possible health effects against the costs of removing Arsenic from drinking water. EPA continues research the health effects of low levels of Arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems (40 CFR 141.154(b)(1)).

Uranium

Five wells in the Las Cruces Municipal Water System have a concentration of uranium that is above the New Mexico Drinking Water Standard. The standard, or maximum contaminant level (MCL), for uranium is 30 ug/L (or 30 parts per billion [ppb]). This is **not** an immediate risk to public health. If it had been, you would have been notified immediately, and provided information about using an alternative water supply. Exposure to uranium in drinking water may result in toxic effects to the kidney. Some persons who drink water containing alpha [particle] emitters in excess of the MCL over **many years** may have an increased risk of getting cancer." The City has already met with NMED and is evaluating ways to come back into compliance with the MCL for uranium. Finally, the City continues to send Tier II Notice by direct mail to all water customers.

Unregulated Contaminants

Monitoring of unregulated contaminants helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants. No unregulated contaminants were detected. The City does not test for *Cryptosporidium* in the Municipal Water Supply System because our source of water is ground water, which is not influenced by surface waters. We avoid this and other potential problems with microorganisms because we pump drinking water from deep in the Mesilla aquifer.

EPA is in the process of promulgating new regulations for radon in drinking water. Radon is a radioactive gas that occurs naturally in the ground, absorbs in water, and is released into indoor air during household use. Radon can also move up through the ground and into the home through cracks and holes in the foundation. Compared to entering the home through the soil, radon entering through tap water, in most cases, will be a small source of radon in indoor air. High exposure levels in indoor air can cause lung cancer, and in drinking water can increase the risk of stomach cancer. No sampling for radon was conducted during 2005.

Additional Information

EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration regulations establish limits for contaminants in bottled water. Drinking water, including bottled water, may reasonably be expected to contain small amounts of certain contaminants.

Sources of drinking water for both tap water and bottled water include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and radioactive material, as well as, substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:
(a) **Microbial contaminants**, such as viruses, bacteria, and protozoa (e.g. *Cryptosporidium, Ecoli, Giardia*)may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
(b) **Inorganic contaminants**, such as salts and metals, can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and farming.
(c) **Pesticides and herbicides** may come from sources such as agriculture, storm-water runoff, and residential uses.
(d) **Organic chemical contaminants**, including synthetic and volatile organic chemicals,

are by-products of industrial processes and petroleum production, and may also come from gas stations, urban storm-water runoff, and septic systems.

(e) **Radioactive contaminants** can be naturally occurring or result from oil and gas mining and production activities.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* are available from EPA's Safe Drinking Water Hotline. More information about contaminants and potential health effects can also be obtained via the Hotline.

Learn More about Your Drinking Water

Amendments to the SDWA in 1996 require all public water supply systems to provide an annual "Consumer Confidence Report" to their customers. We encourage public interest and participation in our community's water quality and decisions affecting drinking water. The Water Resources Section of Utilities holds public meetings as needed when specific issues concerning drinking water affect our community. Otherwise, the most effective way to make comments or suggestions is to telephone or write directly to the Administrator of Water Resources (**528-3515**). Concerns may also be brought before the City Council in their biweekly public meeting. The Water Resources Section does not, at this time, cond[uct] regular public meetings, which are devoted to drinking water issues. Water quality data for the Municipal Water Supply System and more information about the Water Resources Section are available at **www.las-cruces.org**. The Administrator and his staff will be happy to answer any questions, or discuss suggestions you may have, about our drinking water.

Contacts for Information:

Gilbert Morales, Administrator, Water Resources Section Utilities Department P.O. Box 20000, Las Cruces 88004	505-424-6300 www.las-cruces.org
NMED Drinking Water and Community Services Bureau 1001 N. Solano, Las Cruces 88005	505-524-6300 www.nmenv.state.nm.us
EPA Safe Drinking Water Hotline: 800-426-4791	www.epa.gov/safewater/dwhealth.html www.epa.gov/ogwdw/agua/apsalud.html (in Spanish)
EPA Office of Ground Water and Drinking Water	www.epa.gov/ogwdw www.epa.gov/safewater/agua.html (in Spanish)
American Water Works Association	www.awwa.org
The Groundwater Foundation	www.groundwater.org

This report can be made available in alternative formats upon request. To

REFERENCE 22

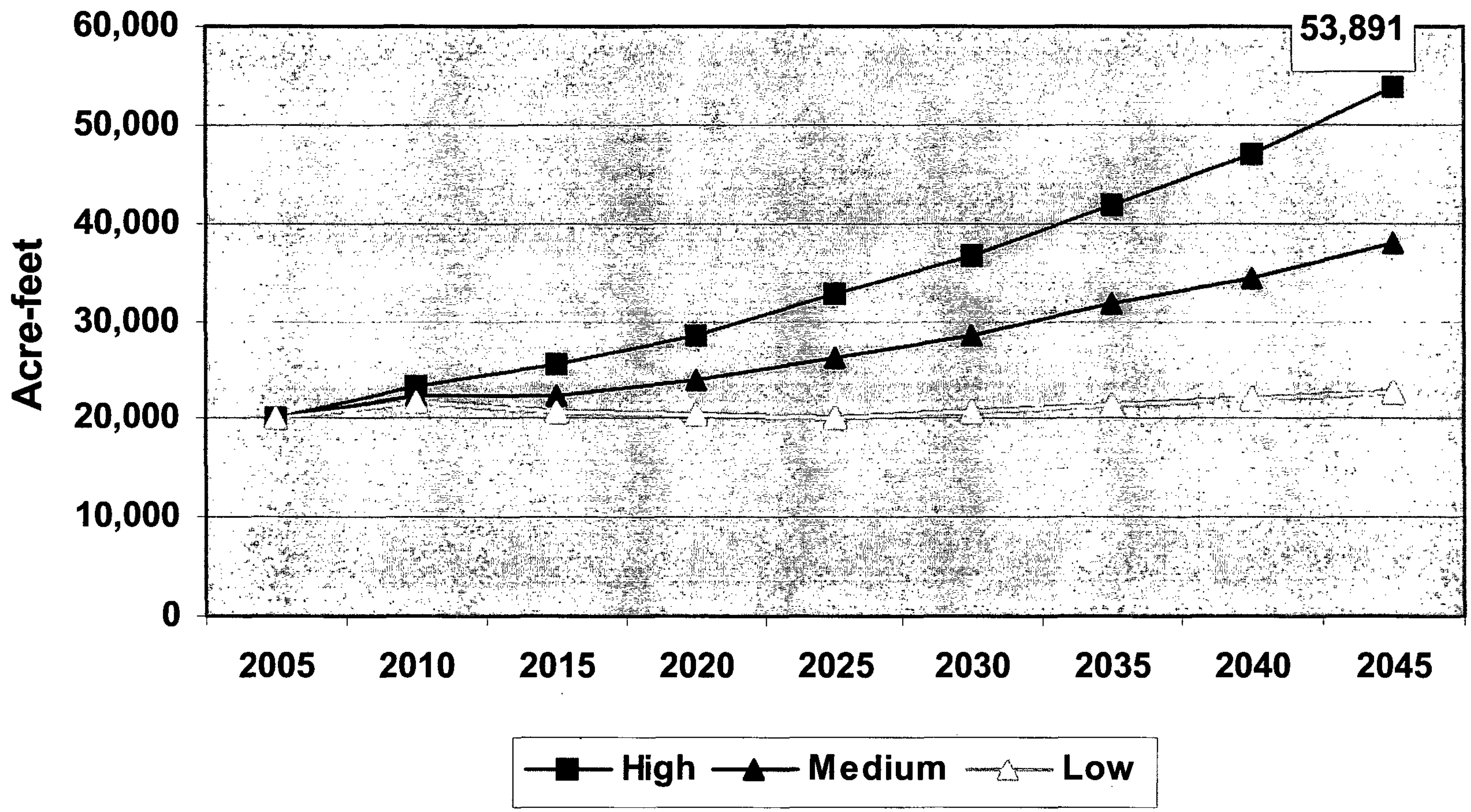
City of Las Cruces®

PEOPLE HELPING PEOPLE

Water Planning, Infrastructure Development and Conservation

Lower Rio Grande Water Users Organization

Water Plan Demand Projections



Projected demand and water rights

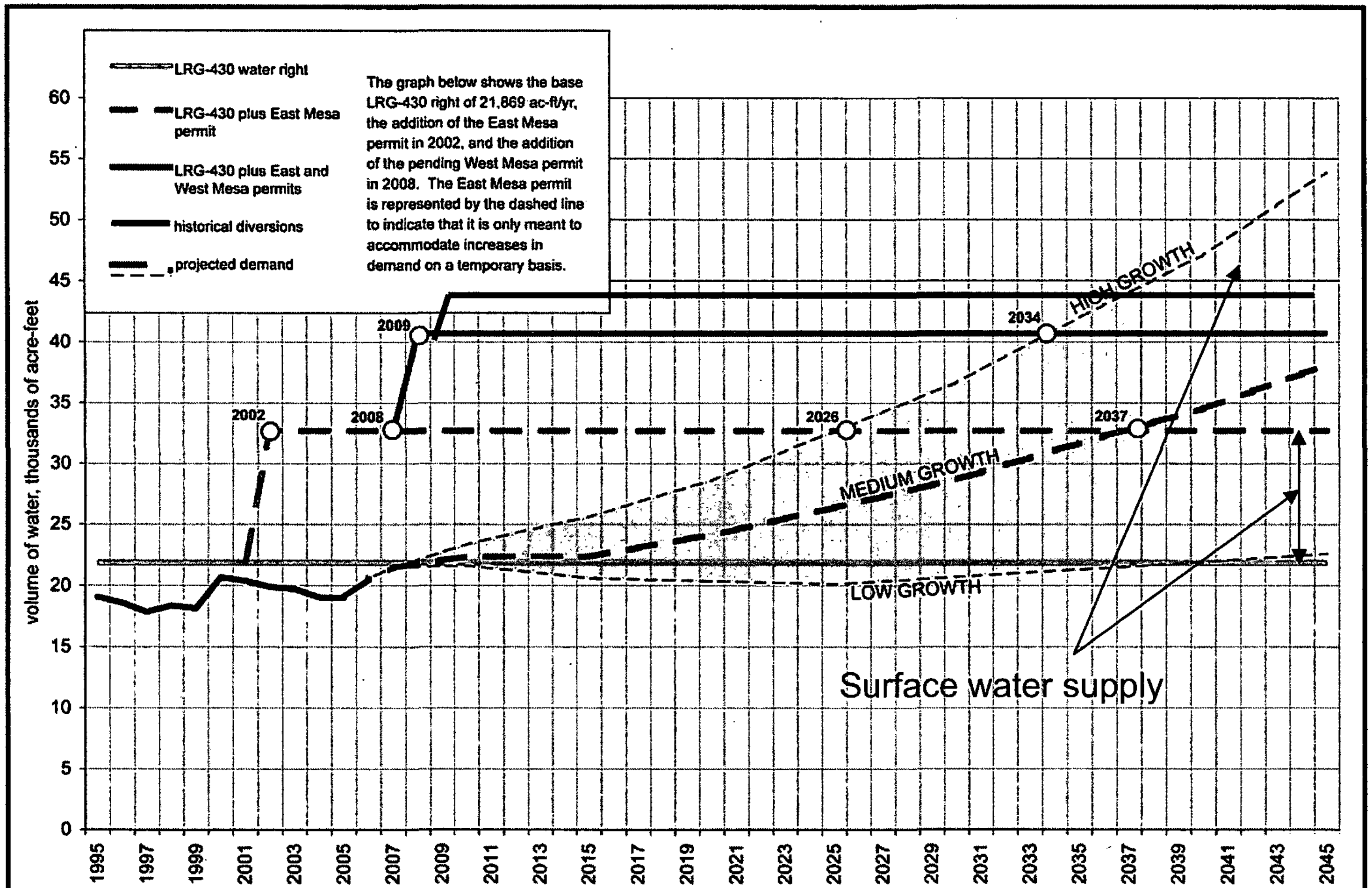
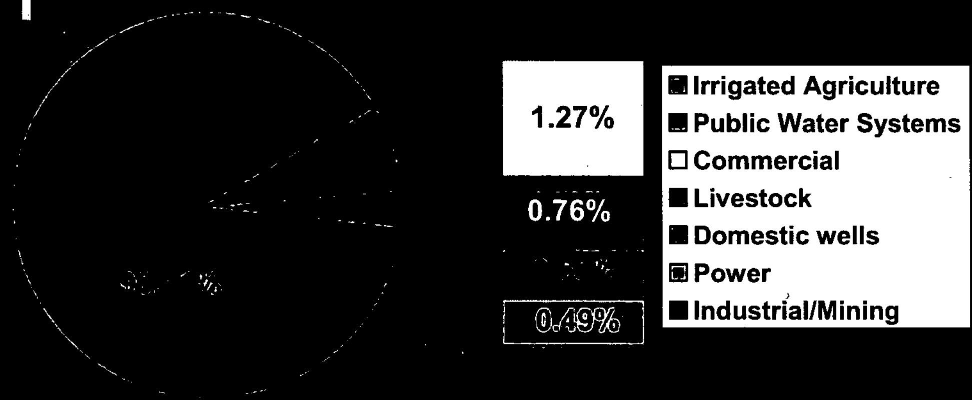
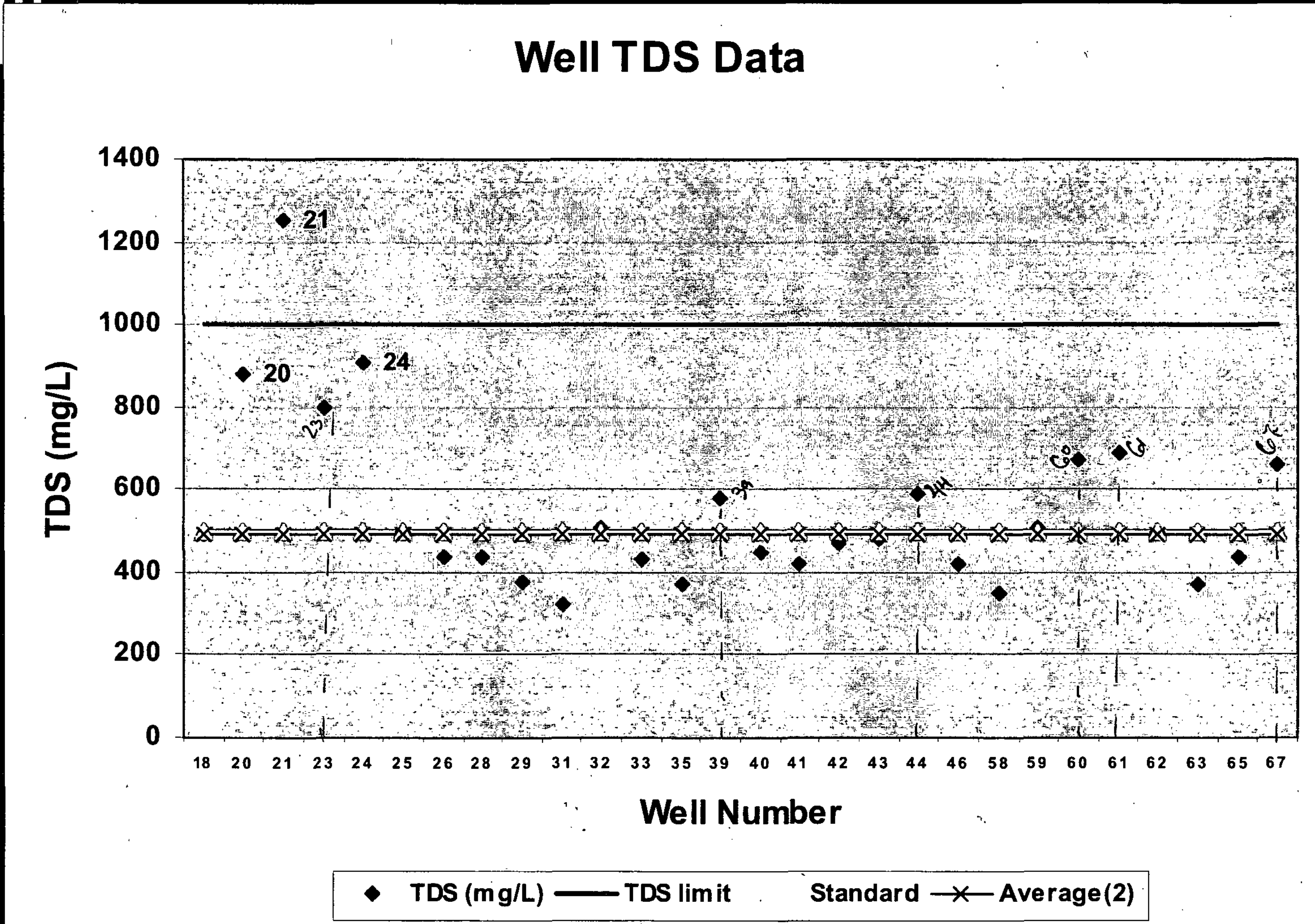


Figure 10. Graph showing City of Las Cruces historical water diversions for 1960 to 2005 and projected water demands for 2006 to 2045 represented by a band representing low to high growth rates, City of Las Cruces's total existing adjudicated water rights, and current and pending permits.

Water Use by Sector in LRG





Well TDS Data
TDS (mg/L)
1400
1200
1000
800
600
400
200
0
21
20
24
23
39
44
60
61
67
18 20 21 23 24 25 26 28 29 31 32 33 35 39 40 41 42 43 44 46 58 59 60 61 62 63 65 67
Well Number
TDS (mg/L)
TDS limit Standard
Average(2)

REFERENCE 23

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB86167	**Collection Date :**	07-11-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Mon Peri I
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L		07-01-2006	09-
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L		07-01-2006	09-
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-

2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	2.251 UG/L	07-01-2006	09-
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	2.251 UG/L	07-01-2006	09-
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2990	BENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2990	BENZENE	524.2	Y	MRL	0.5 UG/L		07-01-200[illegible]	09-
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2996	STYRENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-
2996	STYRENE	524.2	Y	MRL	0.5 UG/L		07-01-2006	09-

Total Number of Records Fetched = 42

Well # 18

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

C[illegible]ty Map

Gl[illegible]ssary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AC01986	**Collection Date :**	10-30-2007

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Mor Peri I
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L			
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L			
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L			
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L			
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L			
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L			
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2979	TRANS-1,2-	524.2	Y	MRL	0.5 UG/L			

	DICHLOROETHYLENE							
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L			
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L			
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L			
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L			
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	33.0 UG/L		
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	33.0 UG/L		
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2990	BENZENE	524.2	Y	MRL	0.5 UG/L			
2990	BENZENE	524.2	Y	MRL	0.5 UG/L			
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L			
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L			
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L			
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L			
2996	STYRENE	524.2	Y	MRL	0.5 UG/L			
2996	STYRENE	524.2	Y	MRL	0.5 UG/L			

Total Number of Records Fetched = 42

Well #21

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Gl[illegible]ary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89544	**Collection Date :**	10-03-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Mor Peri I
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L		10-01-2006	12-
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L		10-01-2006	12-
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-

2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	4.490 UG/L	10-01-2006	12-
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	4.490 UG/L	10-01-2006	12-
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2990	BENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2990	BENZENE	524.2	Y	MRL	0.5 UG/L		10-01-200	12-
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2996	STYRENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-
2996	STYRENE	524.2	Y	MRL	0.5 UG/L		10-01-2006	12-

Total Number of Records Fetched = 42

Well #24

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89545	**Collection Date :**	10-03-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Mor Peri I
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L			
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L			
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L			
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L			
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L			
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L			
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			

2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L			
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L			
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L			
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L			
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	0.996 UG/L		
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	0.996 UG/L		
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2990	BENZENE	524.2	Y	MRL	0.5 UG/L			
2990	BENZENE	524.2	Y	MRL	0.5 UG/L			
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L			
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L			
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L			
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L			
2996	STYRENE	524.2	Y	MRL	0.5 UG/L			
2996	STYRENE	524.2	Y	MRL	0.5 UG/L			

Total Number of Records Fetched = 42

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB87772	**Collection Date :**	08-15-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Mon Peri I
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2378	1,2,4-TRICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2380	CIS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L			
2955	XYLENES, TOTAL	524.2	Y	MRL	0.5 UG/L			
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L			
2964	DICHLOROMETHANE	524.2	Y	MRL	0.5 UG/L			
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2968	O-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2969	P-DICHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L			
2976	VINYL CHLORIDE	524.2	Y	MRL	0.4 UG/L			
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2977	1,1-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2979	TRANS-1,2-DICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2980	1,2-DICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			

2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2981	1,1,1-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L			
2982	CARBON TETRACHLORIDE	524.2	Y	MRL	0.5 UG/L			
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L			
2983	1,2-DICHLOROPROPANE	524.2	Y	MRL	0.5 UG/L			
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2984	TRICHLOROETHYLENE	524.2	Y	MRL	0.5 UG/L			
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2985	1,1,2-TRICHLOROETHANE	524.2	Y	MRL	0.5 UG/L			
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	5.297 UG/L		
2987	TETRACHLOROETHYLENE	524.2	N	MRL	0.5 UG/L	5.297 UG/L		
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2989	CHLOROBENZENE	524.2	Y	MRL	0.5 UG/L			
2990	BENZENE	524.2	Y	MRL	0.5 UG/L			
2990	BENZENE	524.2	Y	MRL	0.5 UG/L			
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L			
2991	TOLUENE	524.2	Y	MRL	0.5 UG/L			
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L			
2992	ETHYLBENZENE	524.2	Y	MRL	0.5 UG/L			
2996	STYRENE	524.2	Y	MRL	0.5 UG/L			
2996	STYRENE	524.2	Y	MRL	0.5 UG/L			

Total Number of Records Fetched = 42

Well #67

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	RC200600203	**Collection Date :**	04-25-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
4004	RADON	913.0-DRAFT	N		6.8 PCI/L	539 PCI/L			

Total Number of Records Fetched = 1

Well # 20

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Gl[illegible]ary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	RC200600369	**Collection Date :**	10-03-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
4000	GROSS ALPHA, EXCL. RADON & U	null	null		null null	16.90 PCI/L			15 PCI/L
4000	GROSS ALPHA, EXCL. RADON & U	null	null		null null	16.90 PCI/L			CI/L
4000	GROSS ALPHA, EXCL. RADON & U	900	N	MRL	2.5 PCI/L	57.1 PCI/L			15 PCI/L
4000	GROSS ALPHA, EXCL. RADON & U	900	N	MRL	2.5 PCI/L	57.1 PCI/L			3 PCI/L
4006	COMBINED URANIUM	200.8	N		2 UG/L	60. UG/L			30 UG/L
4100	GROSS BETA PARTICLE ACTIVITY	900	N	MRL	1.6 PCI/L	21.9 PCI/L			4 MREMY
4100	GROSS BETA PARTICLE ACTIVITY	900	N	MRL	1.6 PCI/L	21.9 PCI/L			4 PCI/L

Total Number of Records Fetched = 7

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Gl ary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	RC200600368	**Collection Date :**	10-03-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
4006	COMBINED URANIUM	200.8	N		1 UG/L	45. UG/L			30 UG/L

Total Number of Records Fetched = 1

Well # 21

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Gl ary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	RC200600370	**Collection Date :**	10-03-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
4006	COMBINED URANIUM	200.8	N		1 UG/L	33. UG/L			30 UG/L

Total Number of Records Fetched = 1

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Gl[illegible]ary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	RC200600371	**Collection Date :**	10-03-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
4006	COMBINED URANIUM	200.8	N		2 UG/L	81. UG/L			30 UG/L

Total Number of Records Fetched = 1

Well # 38

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Gl[illegible]ary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	RC200600372	**Collection Date :**	10-03-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
4006	COMBINED URANIUM	200.8	N		1 UG/L	29 UG/L			30 UG/L

Total Number of Records Fetched = 1

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89148	**Collection Date :**	09-18-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
1022	COPPER, FREE	200.8	N	MRL	0.27 UG/L	227.02 UG/L	01-01-2004	12-31-2006	0.02 MG/L
1030	LEAD	200.8	N	MRL	0.04 UG/L	6.95 UG/L	01-01-2004	12-31-2006	0.001 MG/L

Total Number of Records Fetched = 2

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89142	**Collection Date :**	09-18-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
1022	COPPER, FREE	200.8	N	MRL	0.27 UG/L	201.49 UG/L	01-01-2004	12-31-2006	0.02 MG/L
1030	LEAD	200.8	N	MRL	0.04 UG/L	1.28 UG/L	01-01-2004	12-31-2006	0.001 MG/L

Total Number of Records Fetched = 2

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89133	**Collection Date :**	09-20-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
1022	COPPER, FREE	200.8	N	MRL	0.27 UG/L	175.16 UG/L	01-01-2004	12-31-2006	0.02 MG/L
1030	LEAD	200.8	N	MRL	0.04 UG/L	0.63 UG/L	01-01-2004	12-31-2006	0.001 MG/L

Total Number of Records Fetched = 2

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89729	**Collection Date :**	09-27-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
1022	COPPER, FREE	200.8	N	MRL	0.27 UG/L	111.15 UG/L	01-01-2004	12-31-2006	0.02 MG/L
1030	LEAD	200.8	N	MRL	0.04 UG/L	3.08 UG/L	01-01-2004	12-31-2006	0.001 MG/L

Total Number of Records Fetched = 2

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89730	**Collection Date :**	09-30-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
1022	COPPER, FREE	200.8	N	MRL	0.27 UG/L	70.4 UG/L	01-01-2004	12-31-2006	0.02 MG/L
1030	LEAD	200.8	N	MRL	0.04 UG/L	7.84 UG/L	01-01-2004	12-31-2006	0.001 MG/L

Total Number of Records Fetched = 2

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977
Lab Sample No. :	AB89703	**Collection Date :**	10-02-2006

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	Monitoring Period End Date	MCL
1022	COPPER, FREE	200.8	N	MRL	0.27 UG/L	102.95 UG/L	01-01-2004	12-31-2006	0.02 MG/L
1030	LEAD	200.8	N	MRL	0.04 UG/L	2.41 UG/L	01-01-2004	12-31-2006	0.001 MG/L

Total Number of Records Fetched = 2

Well # 10

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Analyte List

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1
Lab Sample No. :	AA85679	**Collection Date :**	08-19-1

1997

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	M P
2030	P-ISOPROPYLTOLUENE	null	Y	MRL	0.5 UG/L	null		
2216	CHLOROETHANE	null	Y	MRL	0.5 UG/L	null		
2224	TRANS-1,3-DICHLOROPROPENE	null	Y	MRL	0.5 UG/L	null		
2232	1,2-DIBROMOETHYLENE	null	Y	MRL	0.5 UG/L	null		
2378	1,2,4-TRICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null		
2378	1,2,4-TRICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null		
2380	CIS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null		
2380	CIS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null		
2408	DIBROMOMETHANE	null	Y	MRL	0.5 UG/L	null		
2410	1,1-DICHLOROPROPENE	null	Y	MRL	0.5 UG/L	null		
2412	1,3-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null		
2413	1,3-DICHLOROPROPENE	null	Y	MRL	0.5 UG/L	null		
2416	2,2-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null		
2418	1,2,4-TRIMETHYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2420	1,2,3-TRICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null		
2422	N-BUTYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2426	TERT-BUTYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2428	SEC-BUTYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2931	1,2-DIBROMO-3-CHLOROPROPANE	null	Y	MRL	0.5 UG/L	null		
2931	1,2-DIBROMO-3-CHLOROPROPANE	null	Y	MRL	0.5 UG/L	null		
2941	CHLOROFORM	null	Y	MRL	0.5 UG/L	null		
2942	BROMOFORM	null	N		0.5 UG/L	2.6 UG/L		
2943	BROMODICHLOROMETHANE	null	Y	MRL	0.5 UG/L	null		
2944	DIBROMOCHLOROMETHANE	null	N		0.5 UG/L	.8 UG/L		
2955	XYLENES, TOTAL	null	Y	MRL	0.5 UG/L	null		

2955	XYLENES, TOTAL	null	Y	MRL	0.5 UG/L	null	
2964	DICHLOROMETHANE	null	Y	MRL	0.5 UG/L	null	
2964	DICHLOROMETHANE	null	Y	MRL	0.5 UG/L	null	
2968	O-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2968	O-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2969	P-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2969	P-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2976	VINYL CHLORIDE	null	Y	MRL	0.5 UG/L	null	
2976	VINYL CHLORIDE	null	Y	MRL	0.5 UG/L	null	
2977	1,1-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2977	1,1-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2978	1,1-DICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2979	TRANS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2979	TRANS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2980	1,2-DICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2980	1,2-DICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2981	1,1,1-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2981	1,1,1-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2982	CARBON TETRACHLORIDE	null	Y	MRL	0.5 UG/L	null	
2982	CARBON TETRACHLORIDE	null	Y	MRL	0.5 UG/L	null	
2983	1,2-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null	
2983	1,2-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null	
2984	TRICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2984	TRICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2985	1,1,2-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2985	1,1,2-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2987	TETRACHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2987	TETRACHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2988	1,1,2,2-TETRACHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2989	CHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2989	CHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2990	BENZENE	null	Y	MRL	0.5 UG/L	null	

2990	BENZENE	null	Y	MRL	0.5 UG/L	null	
2991	TOLUENE	null	Y	MRL	0.5 UG/L	null	
2991	TOLUENE	null	Y	MRL	0.5 UG/L	null	
2992	ETHYLBENZENE	null	Y	MRL	0.5 UG/L	null	
2992	ETHYLBENZENE	null	Y	MRL	0.5 UG/L	null	
2993	BROMOBENZENE	null	Y	MRL	0.5 UG/L	null	
2994	ISOPROPYLBENZENE	null	Y	MRL	0.5 UG/L	null	
2996	STYRENE	null	Y	MRL	0.5 UG/L	null	
2996	STYRENE	null	Y	MRL	0.5 UG/L	null	
2998	N-PROPYLBENZENE	null	Y	MRL	0.5 UG/L	null	

Total Number of Records Fetched = 67

Drinking Water Bureau

Non-Coliform Sample Results

Return Links

Non-Coliform Samples

Analyte List

Water System Detail

Water Systems

Water System Search

C ty Map

Glossary

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-19
Lab Sample No. :	OR9601889	**Collection Date :**	05-28-19

1996

Analyte Code	Analyte Name	Method Code	Less than Indicator	Level Type	Reporting Level	Concentration level	Monitoring Period Begin Date	M Pe
2030	P-ISOPROPYLTOLUENE	null	Y	MRL	0.5 UG/L	null		
2216	CHLOROETHANE	null	Y	MRL	0.5 UG/L	null		
2224	TRANS-1,3-DICHLOROPROPENE	null	Y	MRL	0.5 UG/L	null		
2247	METHYL ETHYL KETONE	null	Y	MRL	5 UG/L	null		
2251	METHYL TERT-BUTYL ETHER	null	Y	MRL	5 UG/L	null		
2263	TETRAHYDROFURAN	null	Y	MRL	5 UG/L	null		
2378	1,2,4-TRICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null		
2378	1,2,4-TRICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null		
2380	CIS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null		
2380	CIS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null		
2408	DIBROMOMETHANE	null	Y	MRL	0.5 UG/L	null		
2410	1,1-DICHLOROPROPENE	null	Y	MRL	0.5 UG/L	null		
2412	1,3-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null		
2413	1,3-DICHLOROPROPENE	null	Y	MRL	0.5 UG/L	null		
2416	2,2-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null		
2418	1,2,4-TRIMETHYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2420	1,2,3-TRICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null		
2422	N-BUTYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2426	TERT-BUTYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2428	SEC-BUTYLBENZENE	null	Y	MRL	0.5 UG/L	null		
2941	CHLOROFORM	null	Y	MRL	0.5 UG/L	null		
2942	BROMOFORM	null	N		0.5 UG/L	2.7 UG/L		
2943	BROMODICHLOROMETHANE	null	Y	MRL	0.5 UG/L	null		
2944	DIBROMOCHLOROMETHANE	null	N		0.5 UG/L	1.7 UG/L		
2955	XYLENES, TOTAL	null	Y	MRL	0.5 UG/L	null		

2955	XYLENES, TOTAL	null	Y	MRL	0.5 UG/L	null	
2964	DICHLOROMETHANE	null	Y	MRL	0.5 UG/L	null	
2964	DICHLOROMETHANE	null	Y	MRL	0.5 UG/L	null	
2968	O-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2968	O-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2969	P-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2969	P-DICHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2976	VINYL CHLORIDE	null	Y	MRL	0.5 UG/L	null	
2976	VINYL CHLORIDE	null	Y	MRL	0.5 UG/L	null	
2977	1,1-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2977	1,1-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2978	1,1-DICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2979	TRANS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2979	TRANS-1,2-DICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2980	1,2-DICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2980	1,2-DICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2981	1,1,1-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2981	1,1,1-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2982	CARBON TETRACHLORIDE	null	Y	MRL	0.5 UG/L	null	
2982	CARBON TETRACHLORIDE	null	Y	MRL	0.5 UG/L	null	
2983	1,2-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null	
2983	1,2-DICHLOROPROPANE	null	Y	MRL	0.5 UG/L	null	
2984	TRICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2984	TRICHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2985	1,1,2-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2985	1,1,2-TRICHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2987	TETRACHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2987	TETRACHLOROETHYLENE	null	Y	MRL	0.5 UG/L	null	
2988	1,1,2,2-TETRACHLOROETHANE	null	Y	MRL	0.5 UG/L	null	
2989	CHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2989	CHLOROBENZENE	null	Y	MRL	0.5 UG/L	null	
2990	BENZENE	null	Y	MRL	0.5 UG/L	null	

2990	BENZENE	null	Y	MRL	0.5 UG/L	null	
2991	TOLUENE	null	Y	MRL	0.5 UG/L	null	
2991	TOLUENE	null	Y	MRL	0.5 UG/L	null	
2992	ETHYLBENZENE	null	Y	MRL	0.5 UG/L	null	
2992	ETHYLBENZENE	null	Y	MRL	0.5 UG/L	null	
2993	BROMOBENZENE	null	Y	MRL	0.5 UG/L	null	
2994	ISOPROPYLBENZENE	null	Y	MRL	0.5 UG/L	null	
2996	STYRENE	null	Y	MRL	0.5 UG/L	null	
2996	STYRENE	null	Y	MRL	0.5 UG/L	null	
2998	N-PROPYLBENZENE	null	Y	MRL	0.5 UG/L	null	

Total Number of Records Fetched = 67

REFERENCE 24

JOHN SHOMAKER & ASSOCIATES, INC.
WATER-RESOURCE AND ENVIRONMENTAL CONSULTANTS
2703 BROADBENT PARKWAY NE, SUITE B
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-3407, FAX (505) 345-9920

July 5, 2006

Dan Santantonio, Ph.D.
Regulatory Compliance/Joint Superfund Project Manager
Utilities Division
City of Las Cruces
680 N. Motel Boulevard
Las Cruces, New Mexico 88004

Re: Source of naturally occurring uranium in the Mesilla Basin within the City of Las Cruces area

Dear Dr. Santantonio:

John Shomaker & Associates, Inc. (JSAI) has performed a preliminary literature review and investigation on the source of naturally occurring uranium in the Mesilla Basin along the Interstate 25 (I-25) corridor.

The literature review identified several publications by the New Mexico Energy Research Development Institute on the Las Cruces East Mesa Geothermal Field near Tortugas Mountain. The primary reference describing the occurrence of natural uranium concentrations in Mesilla Basin ground water is Whittier et al. (1985). A copy of the reference is enclosed. A list of other relative publications reviewed is attached.

Sources of Uranium

Uranium is typically concentrated in the felsic end of the igneous series, such as granite, thereby suggesting uranium from weathered rock would likely come from the igneous rocks of the Organ Mountains. There are three primary natural deposits of uraninite (the chief ore mineral for uranium) (Nash et al., 1981):

1. hydrothermal veins (possibly found in the monzonite rocks of the Organ Mountains)

2. flat lying deposits in bedded sedimentary rocks, such as the Santa Fe Group sediments that filled the Mesilla and Jornada Basins

3. pyritic conglomerate beds of Precambrian-age (not likely in the area)

Occurrence of Uranium in Ground Water

Uranium minerals are dissolved into ground water by oxidation, and dissolved uranium is commonly precipitated in reducing (oxygen poor) environments. Formation of uranium ore deposits, commonly known as "role front deposits," occurs in unconsolidated sediments or sandstones containing lenses of organic matter.

The geothermal water upwelling along the Jornada Horst contains low uranium concentrations, as determined by sampling at the Old Las Cruces Landfill (JSAI, 2005) and the East Mesa Geothermal Well Field (Whittier et al., 1985).

Whittier et al. (1985) performed a detailed analysis of uranium concentrations in ground water from the Mesilla Basin, Jornada Basin, and geothermal upwelling. They found that high uranium concentrations overlie the cone of depression in the water table that occurs along I-25, and suggested the two phenomena are related. Whittier et al. (1985) also noted increasing uranium concentrations during continued pumping of water wells at New Mexico State University. The source of uranium is possibly related to layers of organic material in the alluvium, where it was accumulated over time by filtration of ground water containing low uranium concentrations. When the water table is lowered below uranium-rich organic deposits, the chemical environment becomes more oxidizing and uranium is released. The organic material is most likely preserved in floodplain deposits and clayey sediments associated with buried oxbow lakes (Whittier et al., 1985).

The distribution of ground-water uranium concentrations in the Las Cruces area is shown on the enclosed map (Fig. 1). The uranium concentration contours were adopted from figure 5 in Whittier et al. (1985), and refined to reflect the recent data obtained from City Wells 10, 19, 20, 21, 24, 38, and 44. The uranium data are easily contoured, and an area of high concentrations is defined along the western side of Interstate 25 from City Well 21 to the area of New Mexico State University (NMSU). City Well 61 has not revealed elevated uranium, although it is located in an area that should have greater than 50 micrograms per liter (μg/L). City Well 61 is completed much deeper in the aquifer (total depth is 1,070 ft) than the adjacent wells (total depth typically less than 600 ft), which may explain the difference.

A graph of time-series uranium concentration trends in selected City wells is shown as Figure 2. There are no trends that would indicate increasing uranium concentrations over time, although some seasonal trends may be inferred and potentially related to pumping cycles.

Other water-quality data from City wells and from the monitoring network at the Griggs and Walnut Site were reviewed for characteristics or trends that may be correlated to observed uranium concentrations. No significant changes in general chemistry at individual wells could be determined. Dissolved oxygen and temperature data from the Griggs and Walnut Site multi-port wells did reveal significant trends that would indicate alternating oxidizing and reducing environments or geothermal gradients.

Conclusions

The zone of naturally occurring elevated uranium can easily be defined laterally with the existing data; although, the vertical distribution and source of uranium appears to be not well understood. The following conclusions were drawn from the literature review and understanding of available data:

1. Elevated uranium concentrations are localized in an area of the Mesilla Basin trending along the west side of I-25 from City Well 21 to NMSU (see Fig. 1).
2. The source of naturally occurring uranium appears to be from localized oxygen-poor stratigraphic intervals containing organic material, such as over-bank and oxbow lake deposits associated with the (1) the Rio Grande alluvium, or (2) Santa Fe Group sediments.
3. The lack of elevated uranium from City Well 61 suggests the source of uranium is in the shallow aquifer where dewatering and oxidation of uranium rich sediments occurs. Similar occurrence of elevated uranium occurs in the Española Basin between Española and Santa Fe, where the shallow aquifer contains naturally occurring concentrations of elevated dissolved uranium (>100 μg/L).
4. There maybe other geologic controls that would explain the observed distribution of elevated uranium, such as areas of geochemical mixing along fault zones. The zone of elevated uranium shown on Figure 1 also correlates with the area of significant inflow of geothermal water along the west side of the Jornada Horst (see Fig. 1).
5. Elevated uranium concentrations in City wells do not appear to be increasing over time (Fig. 2); although, there appears to be some seasonal variation potentially related to pumping cycles.

Recommendations

JSAI recommends additional investigation to better understand the occurrence of elevated uranium that may help develop operational procedures to mitigate production of elevated uranium from affected City wells and also help in the design of treatment systems.

1. Develop a geologic model of the zone of elevated uranium using available lithologic and geophysical logs.
2. Perform additional uranium sampling on selected monitor wells at the Griggs and Walnut Site.
3. Perform discrete-zone sampling on City Wells 38 and 44. Also perform sampling program on Wells 10 and 44, where samples are collected at various pumping rates (step-drawdown test).

If you have any questions or comments, please let us know.

Sincerely,

JOHN SHOMAKER & ASSOCIATES, INC.

Steven T. Finch, Jr.
V.P., Senior Geochemist/Hydrogeologist

STF:sf

Enclosures:
Figures 1 and 2
Copy of report prepared by Whittier et al. (1985) -->(not included in this copy)

References

JSAI (John Shomaker & Associates, Inc.), 2005, Annual ground-water monitoring report for year 2004, Las Cruces Landfill, Las Cruces, New Mexico: consultant's report prepared by John Shomaker & Associates, Inc. for the City of Las Cruces, 21 p.

Gross, J., and Iceman, L., 1983, Subsurface investigations for the area surrounding Tortugas Mountain, Doña Ana County, New Mexico: New Mexico Energy Research and Development Institute, NMERDI 2-67-2238(2), 50 p.

Hawley, J.W., and Kennedy, J.F., 2004, Creation of a digital hydrogeologic framework model of the Mesilla Basin and Southern Jornada del Muerto Basin: New Mexico Water Resources Research Institute Technical Completion Report No. 332, 105 p. plus CD.

King, W.E., Hawley, J.W., Taylor, A.M., and Wilson, R.P., 1971, Geology and ground-water resources of central and western Doña Ana County, New Mexico: Hydrologic Report 1, Water Resources Research Institute in cooperation with New Mexico State Bureau of Mineral and Mineral Resources, 64 p. plus plate.

Lohse, R.L., Schoenmackers, R., Whittier, J., and Gross, J.T., 1985, Geothermal low-temperature reservoir assessment in northern Doña Ana County, New Mexico: New Mexico Energy Research and Development Institute, NMERDI 2-71-4220, 150 p.

Nash, J.T., Granger, H.C., and Adams, S.S., 1981, Geology and concepts of genesis of important types of uranium deposits: Economic Geology, Seventy-Fifth Anniversary Volume, edited by B.J. Skinner, The Economic Geology Publishing Company, El Paso, Texas, pp. 63-116.

Whittier, J., Gross, J., Cochran, J., and Iceman, L., 1985, Uranium disequilibrium investigation of the Las Cruces East Mesa Geothermal Field: New Mexico Energy Research and Development Institute, NMERDI 2-67-2238(3), 50 p.

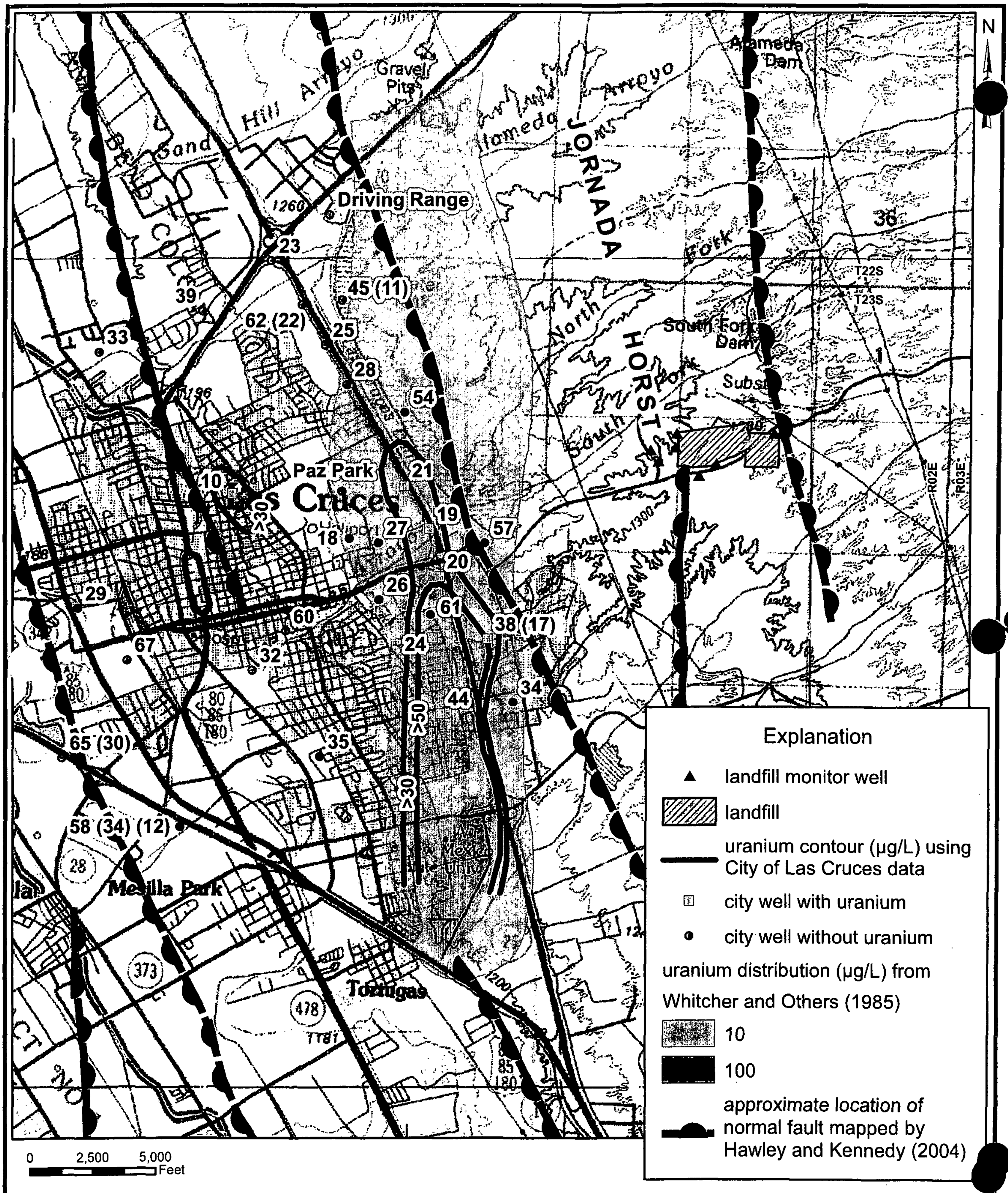


Figure 1. Map of Las Cruces area showing uranium concentration contours and distribution, and faults mapped by Hawley and Kennedy (2004).

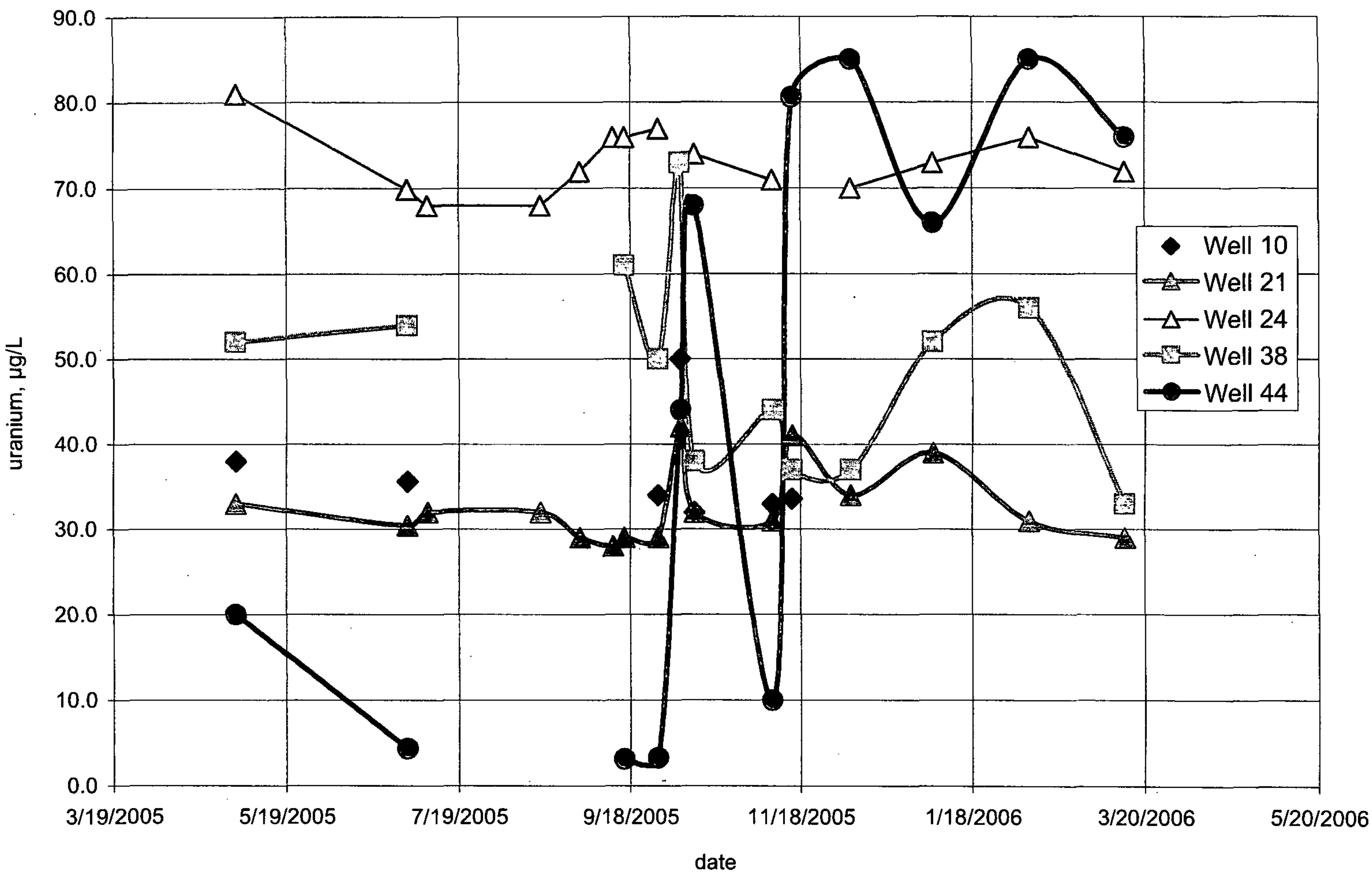


Figure 2. Graph showing time-series data for City of Las Cruces water-supply wells with elevated uranium.

REFERENCE 25

Drinking Water Bureau

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Water System Details

Water System No. :	NM3511707	**Federal Type :**	C
Water System Name :	LAS CRUCES MUNICIPAL WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MORALES, GILBERT	WATER RESOURCE ADMIN	AC	505-528-3514	680 Motel Blvd., LAS CRUCES, NM-88004	Not Available
MORALES, GILBERT	WATER RESOURCE ADMIN	EC	505-528-3514	680 Motel Blvd., LAS CRUCES, NM-88004	Not Available
MARTINEZ, LORENZO		OP	505-528-3506	680 N MOTEL BLVD, LAS CRUCES, NM-88007	Not Available
MARTINEZ, LORENZO		DO	505-528-3506	680 N MOTEL BLVD, LAS CRUCES, NM-88007	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	81025

Service Connections

Type	Count
CB	25063

Sources of Water

Name	Type Code	Status
WELL #27	WL	I
* WELL #28	WL	A
* WELL #29	WL	A
WELL #30	WL	I
* WELL #31	WL	A
* WELL #32	WL	A

Service Areas

Code	Name
R	MUNICIPALITY

* WELL #33	WL	A
* WELL #35	WL	A
WELL #38	WL	I
* WELL #39	WL	A
WELL #44	WL	I
WELL #45	WL	I
WELL #54	WL	I
WELL #57	WL	I
* WELL #59	WL	A
WELL #40	WL	A
WELL #41	WL	A
* WELL #58	WL	A
* WELL #62	WL	A
WELL #60	WL	I
* WELL #61	WL	A
* WELL #65	WL	A
WELL #43	WL	A
WELL #42	WL	A
WELL #10	WL	I
WELL #18	WL	I
WELL #19	WL	I
WELL #20	WL	I
WELL #21	WL	I
WELL #22	WL	I
* WELL #23	WL	A
WELL #24	WL	I
* WELL #25	WL	A
* WELL #26	WL	A
WELL #67	WL	I

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

2

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Glossary

Water System Details

Water System No. :	NM3500407	**Federal Type :**	C
Water System Name :	TERESA MORENO WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-29-1999

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MORENO, TERESA		AC	505-527-0665	PO BOX 306, LAS CRUCES, NM-88004	Not Available
MORENO, TERESA		OP	505-527-0665	PO BOX 306, LAS CRUCES, NM-88004	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	25

Service Connections

Type	Count
CB	10

Sources of Water

Name	Type Code	Status
* WELL #1	WL	A
* WELL #2	WL	A

Service Areas

Code	Name
R	OTHER RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

3

Drinking Water Bureau

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Water System Facilities

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Water Systems

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Glossary

Water System Details

Water System No. :	NM3554307	**Federal Type :**	C
Water System Name :	DONA ANA MDWCA	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MARTINEZ, MARIANO	null	AC	505-526-3491	PO DRAWER 866, DONA ANA, NM-88032	Not Available
FORBES, STEVE	WS SUPERVISOR	OP	505-644-6192	PO BOX 866, DONA ANA, NM-88007	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	8929

Service Connections

Type	Count
CB	3133

Sources of Water

Name	Type Code	Status
WELL #1	WL	I
WELL #2	WL	I
WELL #3	WL	I
WELL #4	WL	I
WELL #5	WL	A
WELL #6	WL	A
* WELL #7	WL	A
WELL #2A	WL	A
WELL #8	WL	A

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

4

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water Systems

Water System Search

County Map

Glossary

Water System Details

Water System No. :	NM3501207	**Federal Type :**	C
Water System Name :	MOONGATE WEST	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	11-18-2003

Points of Contact

Name	Job Title	Type	Phone	Address	Email
GARIANO, JEFFERY		AC	505-382-7001	P.O. Box 243, ORGAN, NM-88052	Not Available
GARIANO, JEFFERY		OP	505-382-7001	P.O. Box 243, ORGAN, NM-88052	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	3785

Service Connections

Type	Count
RS	1328

Sources of Water

Name	Type Code	Status
WELL #10	WL	A
WELL #14	WL	I
WELL #12	WL	A
WELL #13	WL	A
* WELL #14A	WL	A

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3500407	**Federal Type :**	C
Water System Name :	TERESA MORENO WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-29-1999

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MORENO, TERESA		AC	505-527-0665	PO BOX 306, LAS CRUCES, NM-88004	Not Available
MORENO, TERESA		OP	505-527-0665	PO BOX 306, LAS CRUCES, NM-88004	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	25

Service Connections

Type	Count
CB	10

Sources of Water

Name	Type Code	Status
WELL #1	WL	A
WELL #2	WL	A

Service Areas

Code	Name
R	OTHER RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3510207	**Federal Type :**	C
Water System Name :	EL PATIO MHP #2	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1980

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MICHAEL, JIMMY	null	OP	505-642-5515	2265 Avalon, LAS CRUCES, NM-88005	Not Available
MICHAEL, JIMMY	null	OW	505-642-5515	2265 Avalon, LAS CRUCES, NM-88005	Not Available
MICHAEL, JIMMY	null	AC	505-642-5515	2265 Avalon, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	86

Service Connections

Type	Count
CB	30

Sources of Water

Name	Type Code	Status
WELL #1	WL	A

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3511907	**Federal Type :**	C
Water System Name :	MESILLA PARK MANOR WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
ROGERS, PAT	null	OP	505-524-2920	SUITE 15, 225 E. IDAHO AVE, LAS CRUCES, NM-88005	Not Available
ROGERS, DENNY	null	AC	505-524-2920	Suite 15, 225 E. IDAHO, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	848

Service Connections

Type	Count
CB	298

Sources of Water

Name	Type Code	Status
WELL #1	WL	I
WELL #2	WL	A
WELL #3	WL	I
WELL #4	WL	A

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

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Seller Water System	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID

No.							No.

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Water System Details

Water System No. :	NM3513307	**Federal Type :**	C
Water System Name :	MADRID MHP	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-09-1986

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MADRID, PHILLIP	null	AC	505-524-0790	4028 SAN YSIDRO RD Space #20, LAS CRUCES, NM-88007	Not Available
MADRID, PHILLIP	null	OP	505-524-0790	4028 SAN YSIDRO RD Space #20, LAS CRUCES, NM-88007	Not Available
MADRID, PHILLIP	null	OW	505-524-0790	4028 SAN YSIDRO RD Space #20, LAS CRUCES, NM-88007	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	72

Service Connections

Type	Count
CB	25

Sources of Water

Name	Type Code	Status
WELL #1	WL	A
WELL #2	WL	I

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

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Seller Water	Water System	Seller	Purchase	Seller	Seller State	Buyer	Buyer State

System No.	Name	Water Type	Date	Facility Type	Asgn ID No.	Facility Type	Asgn ID No.

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Water System Details

Water System No. :	NM3531207	**Federal Type :**	C
Water System Name :	SAN ANDRES ESTATES WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
ROGERS, PAT	null	OP	505-524-2920	SUITE 15, 225 E. IDAHO AVE, LAS CRUCES, NM-88005	Not Available
ROGERS, DENNY	null	AC	505-524-2920	Suite 15, 225 E. IDAHO, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	741

Service Connections

Type	Count
CB	260

Sources of Water

Name	Type Code	Status
WELL #2	WL	A
WELL #1	WL	A
WELL #3	WL	A

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3528707	**Federal Type :**	C
Water System Name :	NEW MEXICO STATE UNIVERSITY	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
BARELA, ALBERT	null	OP	505-642-2122	804 South Rio Grande, LAS CRUCES, NM-88001	Not Available
BOLLSCHWEILER, DAVID	null	AC	505-646-2101	PO BOX 30001 - MSC 3545, LAS CRUCES, NM-88003	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	24302

Service Connections

Type	Count
CB	3000

Sources of Water

Name	Type Code	Status
WELL #1	WL	I
WELL #9	WL	I
WELL #10	WL	A
WELL #14	WL	A
WELL #17	WL	A
WELL #16	WL	I

Service Areas

Code	Name
R	OTHER RESIDENTIAL AREA

Water Purchases

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Seller Water	Water System	Seller	Purchase	Seller	Seller State	Buyer	Buyer State

System No.	Name	Water Type	Date	Facility Type	Asgn ID No.	Facility Type	Asgn ID No.

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Water System Details

Water System No. :	NM3554107	**Federal Type :**	C
Water System Name :	COUNTRY MOBILE MANOR	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MORALES, GILBERT	null	OP	505-521-7425	2682 LOS MISIONEROS, LAS CRUCES, NM-88011	Not Available
SCOGGIN, JERRY	null	AC	505-524-4617	5501 SANTA GERTREUDIS DR, LAS CRUCES, NM-88005	Not Available
SCOGGIN, JERRY	null	OW	505-524-4617	5501 SANTA GERTREUDIS DR, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	222

Service Connections

Type	Count
CB	78

Sources of Water

Name	Type Code	Status
WELL #1	WL	I
WELL #2	WL	A
WELL #1A	WL	A

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

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Seller							Buyer

Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	State Asgn ID No.

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Water System Details

Water System No. :	NM3554507	**Federal Type :**	C
Water System Name :	FAIRVIEW ESTATES WATER SYSTEM	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
WILLIAMS, LT	null	OW	505-523-2829	PO BOX 244, FAIRACRES, NM-88033	Not Available
WILLIAMS, LT	null	AC	505-523-2829	PO BOX 244, FAIRACRES, NM-88033	Not Available
HERNANDEZ, JOSE	OPERATOR	OP	505-642-0218	PO Box 244, FAIRACRES, NM-88033	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	152

Service Connections

Type	Count
CB	46

Sources of Water

Name	Type Code	Status
WELL #1	WL	A
WELL #2	WL	A
WELL #3	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

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Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3539307	**Federal Type :**	C
Water System Name :	ALAMEDA ACRES MHP	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
HIGGINS, MAXWELL	null	OW	949-293-5485	P.O. Box 74112, SAN CLEMENTE, CA-92673	Not Available
MEDRANO, MEGUEL	null	OP	505-523-2703	230 Three Crosses Ave, LAS CRUICES, NM-88005	Not Available
KRULL, BOB		AC	505-523-0282	230 THREE CROSSES AVE, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	285

Service Connections

Type	Count
CB	100

Sources of Water

Name	Type Code	Status
WELL #1	WL	I
WELL #2	WL	A
CONSECUTIVE CONNECTION #1	CC	I

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

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		Seller		Seller		Buyer	Buyer

Seller Water System No.	Water System Name	Water Type	Purchase Date	Facility Type	Seller State Asgn ID No.	Facility Type	State Asgn ID No.
NM3511707	LAS CRUCES MUNICIPAL WATER SYSTEM	GW		DS	11707000	CC	39307005

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Water System Details

Water System No. :	NM3539807	**Federal Type :**	C
Water System Name :	LAS CRUCES MOBILE HOME PARK	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
STUART, RANDY		AC	505-526-3924	PO BOX 194, FAIRACRES, NM-88033	Not Available
STUART, RANDY		OW	505-526-3924	PO BOX 194, FAIRACRES, NM-88033	Not Available
ROBERTS, DORTHY		OP	505-526-3820	PO BOX 194, FAIRACRES, NM-88033	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	174

Service Connections

Type	Count
CB	61

Sources of Water

Name	Type Code	Status
WELL #1	WL	A
WELL #2	WL	A

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3540007	**Federal Type :**	C
Water System Name :	ST JOHNS MHP	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
ST JOHN, EDWIN	null	OP	505-526-6290	SPACE 1, 31115 EL CAMINO REAL, LAS CRUCES, NM-88007	Not Available
ST JOHN, EDWIN	null	OW	505-526-6290	SPACE 1, 31115 EL CAMINO REAL, LAS CRUCES, NM-88007	Not Available
ST. JOHN, EDWIN	null	AC	505-526-6290	1114 Vilita Loop, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	476

Service Connections

Type	Count
CB	176

Sources of Water

Name	Type Code	Status
WELL #1	WL	A
WELL #2	WL	A
WELL #3	WL	A

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

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Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3540307	**Federal Type :**	C
Water System Name :	COVERED WAGON MOBILE HOME MANOR	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MORALES, GILBERT	null	OP	505-521-7425	2682 LOS MISIONEROS, LAS CRUCES, NM-88011	Not Available
SCOGGIN, JERRY	null	AC	505-524-4617	5501 SANTA GERTREUDIS DR, LAS CRUCES, NM-88005	Not Available
SCOGGIN, JERRY	null	OW	505-524-4617	5501 SANTA GERTREUDIS DR, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	100

Service Connections

Type	Count
CB	41

Sources of Water

Name	Type Code	Status
WELL #1	WL	A

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

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Seller Water	Water System	Seller Water	Purchase	Seller Facility	Seller State	Buyer Facility	Buyer State

System No.	Name	Type	Date	Type	Asgn ID No.	Type	Asgn ID No.

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Water System Details

Water System No. :	NM3541007	**Federal Type :**	C
Water System Name :	RANCHO VISTA MHP	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
THOMAS, LAURA	null	AC	505-527-4833	715 E IDAHO SUITE 1F, LAS CRUCES, NM-88001	Not Available
ARELLANO, CARLOS		OP	915-892-8029	PO Box 1628, ANTHONY, NM-88021	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	120

Service Connections

Type	Count
CB	42

Sources of Water

Name	Type Code	Status
WELL #1	WL	A
WATER METER	CC	I

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
NM3511707	LAS CRUCES MUNICIPAL	GW		null	null	null	null

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Water System No. :	NM3577107	**Federal Type :**	C
Water System Name :	HOLLY GARDEN MHP	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
JOHNSON, DENNIS	null	OP	505-541-7403	850 Holly Drive, LAS CRUCES, NM-88007	Not Available
JOHNSON, DENNIS	null	AC	505-541-7403	850 Holly Drive, LAS CRUCES, NM-88007	Not Available
AGUIRRE, FELIPE	null	OW	505-541-7403	850 Holly Drive, LAS CRUCES, NM-88007	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	311

Service Connections

Type	Count
CB	109

Sources of Water

Name	Type Code	Status
WELL #2	WL	A
WELL #1	WL	I
WATER METER	CC	I

Service Areas

Code	Name
R	MOBILE HOME PARK

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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NM3511707	LAS CRUCES MUNICIPAL WATER SYSTEM	GW		null	null	null	null

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Water System Details

Water System No. :	NM3555407	**Federal Type :**	C
Water System Name :	WINTERHAVEN MDWC AND SWA	**State Type :**	C
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
FLORES, R. Y.	null	AC	505-523-5734	3414 WINTERHAVEN, LAS CRUCES, NM-88005	Not Available
MARTINEZ, SAL	null	OP	505-523-5734	3414 Winterhaven, LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	163

Service Connections

Type	Count
CB	57

Sources of Water

Name	Type Code	Status
WELL #1	WL	I
WELL #2	WL	A

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Water Type	Purchase Date	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	NM3592807	**Federal Type :**	NC
Water System Name :	COACHLIGHT INN	**State Type :**	NC
Principal County Served :	DONA ANA	**Primary Source :**	GW
Status :	A	**Activity Date :**	06-01-1977

Points of Contact

Name	Job Title	Type	Phone	Address	Email
MORALES, GILBERT	null	OP	575-521-7425	2682 LOS MISIONEROS, LAS CRUCES, NM-88011	Not Available
SUNDAHL, PEGGY	null	AC	575-526-3301	301 South Motel Blvd., LAS CRUCES, NM-88005	Not Available

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	T	100

Service Connections

Type	Count
CB	142

Sources of Water

Name	Type Code	Status
WELL #1	WL	A

Service Areas

Code	Name
T	HOTEL/MOTEL

Water Purchases

Seller Water	Water System	Seller Water	Purchase	Seller Facility	Seller State	Buyer Facility	Buyer State

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U.S. Census Bureau
American FactFinder

FACT SHEET

Dona Ana County, New Mexico

2006 American Community Survey
Data Profile Highlights:

NOTE. Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Social Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
Average household size	2.81	(X)	2.61	+/-0.06
Average family size	3.36	(X)	3.20	+/-0.11
Population 25 years and over	113,002			+/-857
High school graduate or higher	(X)	73.8	84.1%	(X)
Bachelor's degree or higher	(X)	24.9	27.0%	(X)
Civilian veterans (civilian population 18 years and over)	13,967	10.1	10.4%	+/-1,857
Disability status (population 5 years and over)	24,033	13.8	15.1%	+/-2,298
Foreign born	38,938	20.1	12.5%	+/-3,986
Male, Now married, except separated (population 15 years and over)	37,132	51.5	52.4%	+/-2,102
Female, Now married, except separated (population 15 years and over)	35,585	47.1	48.4%	+/-2,516
Speak a language other than English at home (population 5 years and over)	100,841	56.8	19.7%	+/-3,561
Household population	188,517			+/-221
Group quarters population	(X)	(X)	(X)	(X)

Economic Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
In labor force (population 16 years and over)	88,709	61.4	65.0%	+/-2,532
Mean travel time to work in minutes (workers 16 years and over)	19.2	(X)	25.0	+/-1.1
Median household income (in 2006 inflation-adjusted dollars)	33,952	(X)	48,451	+/-3,031
Median family income (in 2006 inflation-adjusted dollars)	39,455	(X)	58,526	+/-3,256
Per capita income (in 2006 inflation-adjusted dollars)	15,859	(X)	25,267	+/-898
Families below poverty level	(X)	20.2	9.8%	(X)
Individuals below poverty level	(X)	24.4	13.3%	(X)

Housing Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
Total housing units	74,661			+/-92
Occupied housing units	67,125	89.9	88.4%	+/-1,537
Owner-occupied housing units	42,887	63.9	67.3%	+/-2,053
Renter-occupied housing units	24,238	36.1	32.7%	+/-1,943
Vacant housing units	7,536	10.1	11.6%	+/-1,538
Owner-occupied homes	42,887			+/-2,053
Median value (dollars)	117,100	(X)	185,200	+/-10,206
Median of selected monthly owner costs				
With a mortgage (dollars)	944	(X)	1,402	+/-39
Not mortgaged (dollars)	297	(X)	399	+/-22

ACS Demographic Estimates - show more >>	Estimate	Percent	U.S.	Margin of Error
Total population	193,888			*****
Male	95,468	49.2	49.2%	+/-558
Female	98,420	50.8	50.8%	+/-558
Median age (years)	30.7	(X)	36.4	+/-0.4
Under 5 years	16,388	8.5	6.8%	+/-227
18 years and over	138,616	71.5	75.4%	+/-733
65 years and over	22,313	11.5	12.4%	+/-337

One race	191,207	98.6	98.0%	+/-1,142
White	165,604	85.4	73.9%	+/-3,712
Black or African American	4,205	2.2	12.4%	+/-803
American Indian and Alaska Native	2,365	1.2	0.8%	+/-491
Asian	2,095	1.1	4.4%	+/-811
Native Hawaiian and Other Pacific Islander	58	0.0	0.1%	+/-96
Some other race	16,880	8.7	6.3%	+/-2,882
Two or more races	2,681	1.4	2.0%	+/-1,142
Hispanic or Latino (of any race)	126,102	65.0	14.8%	*****

Source: U.S. Census Bureau, 2006 American Community Survey

Explanation of Symbols:
'***' - The median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
'*****' - The estimate is controlled. A statistical test for sampling variability is not appropriate.
'N' - Data for this geographic area cannot be displayed because the number of sample cases is too small.
'(X)' - The value is not applicable or not available.

The letters PDF or symbol indicate a document is in the Portable Document Format (PDF). To view the file you will need the Adobe® Acrobat® Reader, which is available for **free** from the Adobe web site.

REFERENCE 27

1/17/08

Regional Water Planning for the Lower Rio Grande Region of New Mexico

Planning for Current and Future Water Needs

The following is a brief synopsis of the five areas covered in the Doña Ana Regional Water Plan.

- ***Analysis of the Surface and Groundwater Supply Available to the Region***
- ***Demographic Analysis***
- ***Population Projections to 2040***
- ***Current Water Use and Project Water Demand***
- ***Strategies for Future Management of the Region's Water.***

ANALYSIS OF THE SURFACE AND GROUNDWATER SUPPLY AVAILABLE TO THE REGION

The average annual precipitation in the Las Cruces area is approximately 8.49 inches. More than one half the annual precipitation occurs during the summer months, particularly in the period between July and September. There are several drainage basins within the planning region. Upland watersheds drain to the basins in the direction of the Rio Grande. Few actually reach the river, the majority 'dead-end' into the sandy bottoms of the main drainage basins.

The Rio Grande is the sole perennial surface water source and the primary source of surface water in the planning region. The Rio Grande flows through a valley that is part of a narrow structural depression. The Rio Grande Project (constructed in the early 1900's) developed all the remaining flows of the Rio Grande and its tributaries from Elephant Butte Reservoir to Fort Quitman, Texas. Within the planning region, the Elephant Butte Irrigation District (EBID) administers the Project. The volume of surface runoff is included in identification of available surface water resources for the Rio Grande.

The National Pollution Discharge Elimination System (NPDES) regulated by the New Mexico Environmental Department (NMED) Surface Water Bureau indicate that permits have been issued to six municipal and other wastewater treatment plants/systems along the Rio Grande. Hatch, Las Cruces, Gadsden ISD, Anthony, Santa Teresa, and Sunland Park hold permits from the NMED and NPDES. Treated wastewater is required to conform to the US Environmental Protection Agency (EPA) regulatory standards. The total permitted discharge of approximately 19.1 MGD from the six plants, which represents a return flow of approximately fifty-nine acre-feet per day of treated wastewater to the Rio Grande.

The NMED Groundwater Division has issued groundwater discharge permits to commercial and industrial entities in the planning region. The majority of industries with groundwater discharge permits are diary, food processing facilities, or rural smaller industrial/ commercial operations. These permit holders are allowed to store their wastewater in lined ponds, to utilize land-application and/or discharge to septic systems. Dona Ana County also operates a septage disposal facility in Mesquite, consisting of lined evaporation basins. These discharges do not directly discharge into the Rio Grande, or any canals or drains. Therefore, they do not directly impact the available surface water supplies within the Rio Grande.

Within the planning region there are no major storage reservoirs. The City of Las Cruces maintains Burn Lake (recreational), which is fed via irrigation and irrigation drain water. Stormwater runoff from west central sections of Las Cruces also drain into Burn Lake. The approximate capacity of this recreational facility is 390 acre-feet. Storm water dam facilities are also located within the planning region, but are only designed as detention facilities, and therefore do not maintain a permanent pool behind them.

Recent studies within the planning region indicate that there is a link between the surface water system of the Rio Grande and the groundwater supplies. Agriculture provides the major source of groundwater recharge in the plan area, in return the aquifer provides water to the river under certain conditions. Issues which affect the relations between the surface water sources and the underlying shallow aquifer include irrigation practices, weather and precipitation patterns, releases of water from the Caballo Reservoir upstream, and well pumping rates.

Agriculture is the dominant use of land within the Rincon and Mesilla Valley. Irrigation consumes the largest amount of water. Major crops include cotton, pecans, alfalfa, cereal grains, and vegetables. The EBID distributes irrigation waters from the Rio Grande for the Mesilla Valley. Groundwater is also used to supplement surface water where needed. Annual groundwater withdrawals for irrigation, municipal, industrial and domestic wells vary depending on the amount of surface irrigation water available from the river.

The four-groundwater basins in the planning region include:

- Jornada del Muerto
- Mesilla Basin
- Hueco Bolson
- Rincon Valley Basin

MESILLA BASIN is an important hydrologic basin for economic development in southern New Mexico. The Mesilla Basin occupies the central portion of Dona Ana County, covering approximately 1,110 square miles. The main aquifers of the Mesilla Basin consist of the Rio Grande deposits and the Santa Fe group basin-fill. Water levels in the Mesilla Basin range from 10 feet below ground level (bgl) near the Rio Grande to 300 feet or more bgl in the western and east-central part of the basin. Groundwater flow in the Mesilla Basin is generally to the southeast, parallel to the trend of the Rio Grande with groundwater flowing from higher elevations to lower elevations. Natural discharge from the Mesilla Basin occurs near the El Paso Narrows. The majority of groundwater is discharged as drain flow and evaporation. Groundwater recharge in the Mesilla Basin occurs along arroyos during precipitation events. This process is known as 'slope-front recharge'. Recharge also occurs from the Rio Grande and associated irrigation canals. According to previous studies there are approximately 20 million acre-feet of freshwater and 2.7 million acre-feet of slightly saline water available for pumping in the Mesilla Basin.

JORNADA DEL MUERTO lies between the San Andres Mountains to the east and Caballo, San Diego, and Dona Ana Mountains, and the Mesilla Basin to the west. Water levels in the Jornada del Muerto Basin range from 50 to over 500 feet bgl. The direction of groundwater flow in the Jornada Basin is west to southwest towards the Rio Grande Valley. Natural discharge

The two broad water demand categories in Doña Ana County are:

- The use of surface water supply developed under the US Bureau of Reclamation Rio Grande Project; and
- The use of regional groundwater supply as developed by private individuals, industrial-commercial interests, semi-public entities, and municipalities.

CURRENT WATER USE AND PROJECT WATER DEMAND

During the periods of low river flow when releases are not being made from Elephant Butte Reservoir, the Rio Grande gains base-flow from the surrounding shallow aquifers. All surface water demands for irrigation under the EBID are met by water delivered by EBID. Water releases are from storage in Elephant Butte and Caballo Reservoirs located 30 miles north of the Region in Sierra County. However, not all releases from these reservoirs are used in the region. Some of the water is lost due to evaporation, and forty-three percent is committed to the El Paso County Water Improvement District No. 1 (EPCWID) in Texas. The consumptive use of the surface water supply available to New Mexico from Elephant Butte Reservoir is currently allocated exclusively for irrigated agriculture. There is also the non-consumptive use of the Reservoir water for power generation. A significant amount of consumptive water use is associated with the maintenance of the non-beneficial vegetation that grows along ditches and drains maintained by EBID and in the bosque areas.

Adjudication of water rights in the Lower Rio Grande began in 1986, but no final date has been set for the completion. The adjudication will determine how much groundwater can be pumped without affecting senior surface water rights.

The main source of surface water in the planning region is from flows stored the Elephant Butte Reservoir. This reservoir is the basic storage unit for the Rio Grande Project established in 1906 to provide irrigation water to farms in Texas and New Mexico by capturing flood-flows and storing them in the Reservoir.

The Rio Grande Project was also established to ensure that the United States could deliver water to Mexico. The 1906 Treaty negotiated with Mexico required 60,000 acre-feet of water to be delivered to Mexico at the Acequia Madre. The United States has been able to deliver this amount in most years, however the amount is sometimes reduced during periods of short supply from the Elephant Butte Reservoir.

Colorado, Texas and New Mexico entered into an interstate compact that divided the supply of the Rio Grande between the three states by providing a sliding scale delivery system. New Mexico's deliveries at Elephant Butte were to the Rio Grande Project. It did include deliveries to Mexico. The compact also contains provisions on volumes of water to be released from storage under certain circumstances.

The Rio Grande Project lands, canal system, drains and diversion dams are located on a narrow 150-mile river reach of the Rio Grande from Elephant Butte Reservoir to the southern line of El Paso County and these facilities are adequate to meet current demands.

Prior to the start of the irrigation season each year, the EBID announces the anticipated allocations to District farmers in terms of acre-feet per acre. The irrigation District must limit diversions at Perchas, Leasburg and Mesilla dams based on the storage available for release in Elephant Butte and Caballo reservoirs. The district must ensure that sufficient water will be available to provide equity to Texas irrigators and to make deliveries to Mexico. At the end of the water year, if there is unused water, it is allowed to remain in storage for reallocation the following year.

Irrigation water demands in the District are based on crop consumptive use crop evapo-transpiration. Factors that affect demand for water in the District include the cropping patterns and associated length of the growing seasons, the weather and the effective rainfall for each crop. In making farm deliveries, the District does not differentiate between crops, but distributes the annual allotment pro-rated for the 90,640 acres on its Assessment Roll depending on the Project water supply available.

Ground water is used in all categories of demands in the region including irrigation, which represents the largest source of demand followed by municipal requirements and by small public water supplies.

Today there are eight categories of water use. These categories include:

- Public water supply
- Domestic Use
- Industrial
- Commercial
- Irrigated Agriculture
- Livestock
- Mining
- Power

Water demands for public water supplies include those exerted by water utilities, both publicly or privately owned, and that have at least 15 service connections, or that regularly serve an average of at least 25 individuals daily at least 60 days out of the year. Most of the public water supplies in the planning region serve a relatively small number of connections where uses are limited to household and garden purposes. Public water supplies also provide water for parks, playing fields, golf courses and recreational activities.

Domestic wells serve single family or multiple housing units as long as the total demand does not exceed 3 acre-feet per year. If more than 25 occupants are served, the supply would be classified as a public water system. Water from domestic wells is used for drinking, food preparations, bathing, washing clothes and dishes, flushing toilets and watering lawns and gardens.

Industrial uses of water are met by diversions from groundwater. The Office of the State Engineer (OSE) identifies twenty-five industrial wells in the region with a total use of approximately 77-acre feet per year.

Commercial uses within the planning region include agricultural product processing, institutions, businesses, campgrounds, picnic areas and visitor centers. The total for industrial and commercial uses listed in 1997 was approximately 6,000 acre-feet per year.

Irrigated agriculture uses ground water to process agricultural products, to clean facilities and to provide cooling water. The OSE lists 1,738 wells in the region used for irrigation.

Wells used for irrigation purposes fall under three categories:

- Wells that provide supplemental water to EBID lands during years when a full surface supply is not provided.
- Wells that are in current use to provide additional irrigation water beyond that available from the EBID, even in years of full supply.
- Wells that are used for crops where groundwater is the only source of supply.

Livestock demands in the planning region depend on groundwater. Demands for the livestock is approximately 4,500-acre feet per year. OSE lists one hundred and forty wells in the planning region as sources of water for livestock. Only one percent of water for livestock is obtained from surface water.

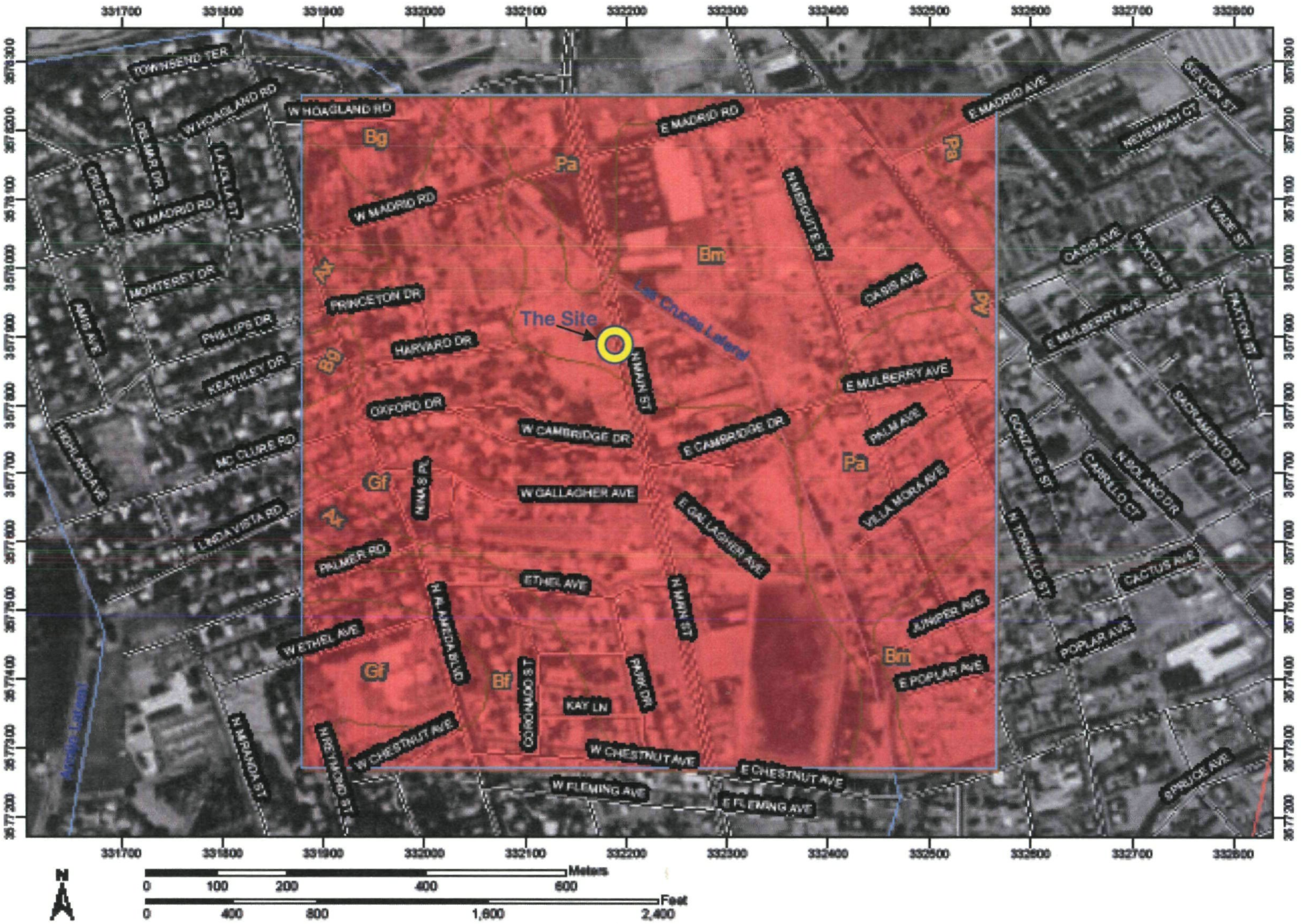
Mining in the planning region includes sand and gravel operations, rock quarries and the mining of volcanic materials. Groundwater demand for mining activities is approximately 66 acre-feet per year. According to OSE 60 wells serve the mining demands.

There is one power generation facility in Dona Ana County and it is owned and operated by El Paso Electric. The power generation facility is located near Sunland Park, in the southern part of the County. The water requirement for the power generation is approximately 3,500 acre-feet per year. Water demand for cooling water is approximately 2,400 acre-feet per year.

Per capita water withdrawal rates vary from just over 70 gallons per capita per day (gpcd) to 255 gpcd. Over inflated water use figures for the White Sands Missile Range water system is due to the influx of non-resident populations during the working hours. The average person in the planning region consumes 182 gallons per day.

REFERENCE 28

Flooding Frequency Class--Dona Ana County Area, New Mexico
(1800-1900 North Main Street, Las Cruces, New Mexico)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent

Political Features

Municipalities

- Cities
- Urban Areas

Water Features

- Oceans
- Streams and Canals

Transportation

- Rails

Roads

- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 13N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dona Ana County Area, New Mexico
Survey Area Data: Version 6, Jan 28, 2007

Date(s) aerial images were photographed: 10/6/1996

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Flooding Frequency Class

Flooding Frequency Class— Summary by Map Unit — Dona Ana County Area, New Mexico				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ad	Adelino sandy clay loam	None	1.1	0.5%
Ax	Armijo clay	None	5.9	2.5%
Bf	Belen clay loam	None	17.9	7.4%
Bg	Belen clay	None	7.4	3.1%
Bm	Bluepoint loamy sand, 1 to 5 percent slopes	None	66.8	27.7%
Gf	Glendale clay loam	None	101.4	42.1%
Pa	Pajarito fine sandy loam	None	40.4	16.8%
Totals for Area of Interest (AOI)			240.9	100.0%

Description

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December